PRODUCTS finishing

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Products Finishing

Orderliness

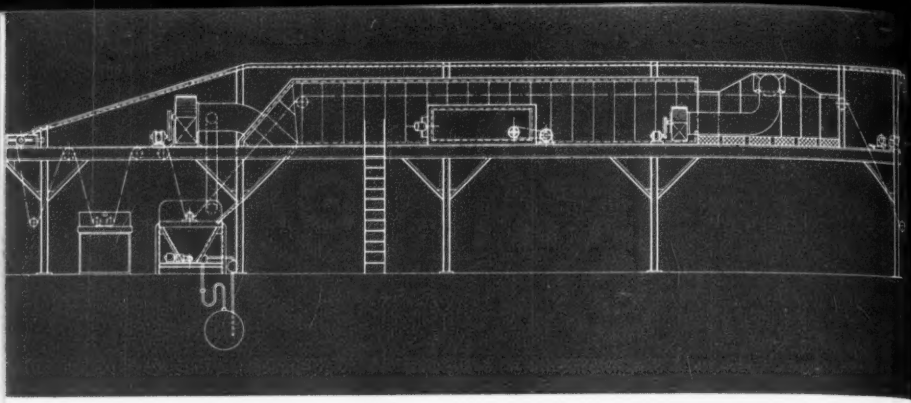
If cleanliness is next to godliness, many of us, unfortunately, have a long way to go. Few metal finishers ever won their wings through neatness, and only too rare is the member of our profession whose halo bears the citation: "For meritorious achievement in keeping his shop clean and orderly."

Yet the path which we should have to follow is not rugged. Perhaps its greatest hurdle would consist in overcoming the purely human tendency to shun change. We have a great deal of inertia when it comes to doing things differently, and at times this barrier constitutes a veritable prison. We can't get out of it. Or, at least, we think we can't, which amounts to the same thing.

Peculiarly enough, however, the habit of systematic orderliness is every bit as difficult to overcome, once it has been established, as is that of sloven and slipshod housekeeping. Inertia works both ways.

Economically, and from the standpoint of efficiency, there is no comparison between the two habits, only contrast. On the one hand we have perpetual chaos, punctuated from time to time by sporadic attempts to lessen the confusion by putting things back into some sort of makeshift system. On the other hand we see automatic, clockwork precision operating under a pattern of regularity that countenances no deviation from a prescribed course. In one case nobody knows where anything is, and valuable man-hours are wasted whenever somebody happens to want something that is not in his immediate sight. Other man-hours are lost as the result of accidents which occur by the simple process of falling over objects which turn up at the most inconvenient times. In the other case, all operations are conducted with maximum efficiency and dispatch, and unforeseen disturbances become so conspicuous that they are observed on the spot.

Which is the better habit?



Landing Mats Finished at High Speed Rate

By C. A. LITZLER
Chief Engineer, Industrial Oven Engineering Company

A HIGH speed finishing system which has helped its owner win the Army-Navy "E" for excellence in the production of airplane landing mats and which is immediately adaptable for peacetime production has been installed by Industrial Oven Engineering Company at the Niles, Ohio, plant of the National Gypsum Company.

Since portable landing mats are being used by the AAF in every zone of military operations and are subjected to the widest variations of climate, to give them a protective and durable finish without delaying production lines presented more than an average finishing problem. In the first work on this job, it was found that the production of these sectional parts was being completed at a faster rate than they could be finished. Now, with the use of this high speed finishing installation, the time consumed from the start of the finishing process to the actual loading in freight cars is only a matter of hours, instead of the days previously required, and enough steel sections to make six complete portable airfields are now being turned out monthly.

These mats, manufactured from 10-gauge steel sheets in sections 19 inches wide by 10 feet long, are discharged from the press performing the final bending and shearing operation at the rate of 200 an hour, and are carried by a gasoline truck to the loading station. The work of only two men is necessary to load the conveyor of this system which was designed to handle one complete mat every 7 seconds. However, in the event of a slower production rate, a main variable speed drive permits adjustment.

(Above) Drawing of automatic finishing system used in the production of airplane landing mats

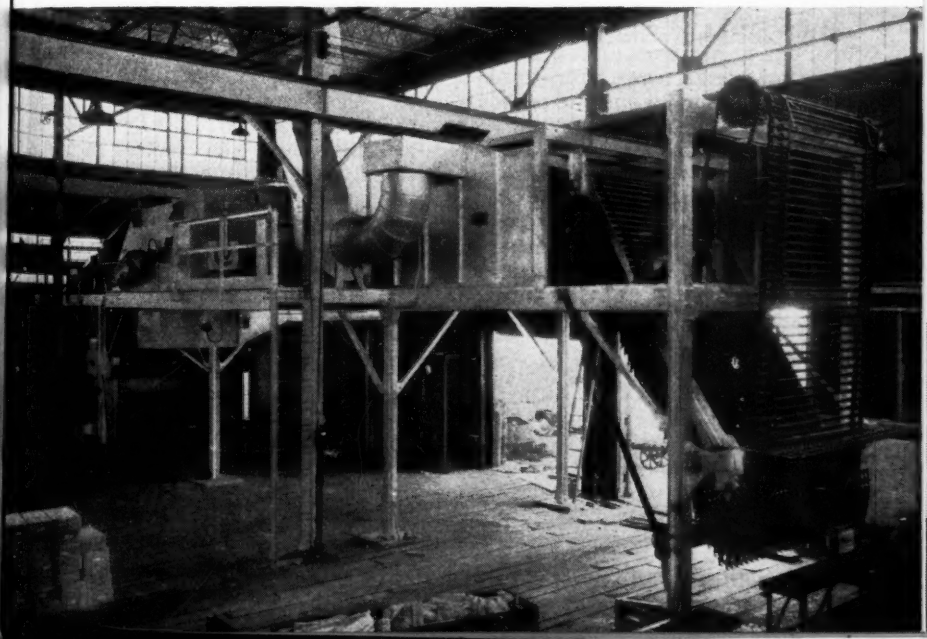
The mats first pass through a vapor degreaser which removes all film and grease and leaves them ready for the automatic painting process. The degreasing equipment is made to take care of the maximum production capacity of the installation.

The dip tank, which the mats next enter, is equipped to provide the necessary turbulence, a homogeneous solution, even coverage of all parts, and a minimum carry-over to the drain board. Passing from the dip tank, the conveyer enters the oven exhaust zone. At this point, a large-volume fan exhausts approximately 25 per cent of the oven atmosphere in order to maintain safe operating conditions within the oven zone. This fan also directs the air from the main oven zone into the exhaust zone and flashes the volatiles from the freshly dipped mats before they enter the baking zone of the oven. Another function of the exhaust fan is to create an efficient air seal at the open entrance end of the oven by taking air from both the oven and the room.

This preheating process requires 4 minutes. The mats then pass into the high-temperature baking zone of the oven where the finish is properly baked. From the baking zone, the mats enter the cooling zone where room air is inspirated by a large-volume, centrifugal fan. The heat, taken from the mats during this cooling period, is used for the purpose of preheating the primary and secondary combustion air of the heating system. If desired, any excess air can be diverted to the room for space heating. The utilization of this heat results in increased economy of operation and the over-all efficiency of the system.

The excellent finishes resulting from this process are due to a number of factors. Among these are: (1) efficient air distribution over the work, (2) uniform temperature in the baking zone,

Overall view of the system from the unloading end



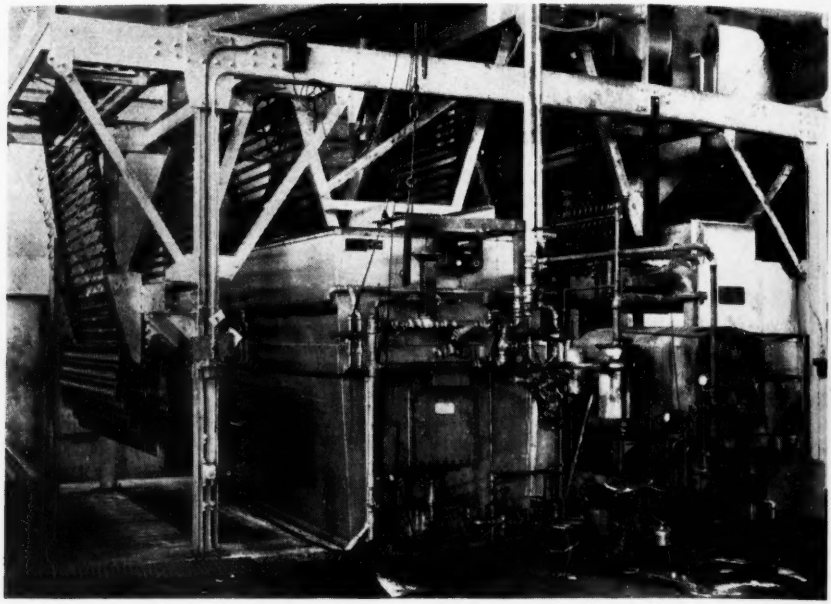


Illustration showing the loading end of the finishing system, including the automatic degreaser and agitated dip tank

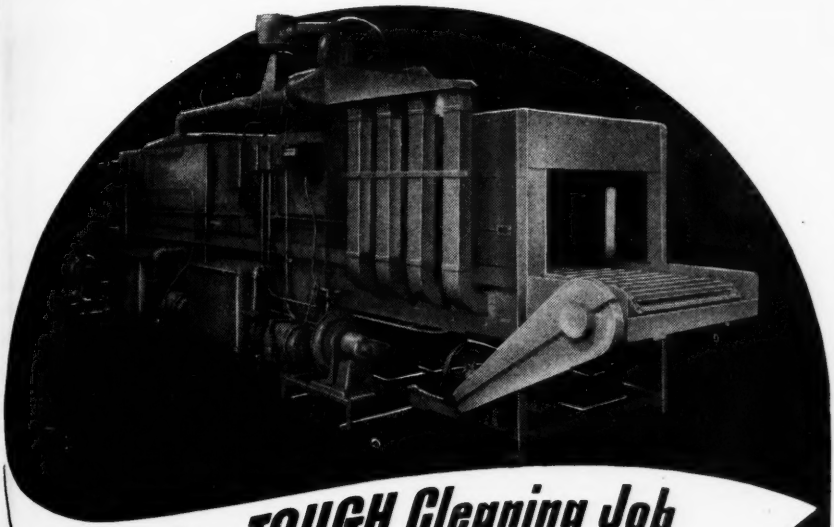
(3) exhaust conditions regulated to maintain proper oven atmosphere, and (4) a low overall temperature gradient between the supply and the recirculation temperatures.

When the mats are cool enough to be handled, they leave the cooling zone to be unloaded at floor level. An idea of the overall efficiency of this continuous finishing setup can be obtained from the fact that its production capacity is over 500 tons a day, and that only four men are required to handle the loading and unloading.

The finished sections are placed on dollies equipped with locating pins which align them for wiring and strapping. When the wiring, strapping and bundling operations have been completed, a gravity conveyer carries the sections to the station where they are loaded by means of a crane into gondola type cars for shipment.

The economy of this high speed finishing system is noteworthy. By actual test, the use of the preheated air from the cooling zone as make-up air for the heating system has resulted in a fuel saving of 20 per cent. Attendant labor has been reduced to one fourth of that previously required. Scrap rejection has been cut to less than one fourth of one per cent of total production. In-process time has been reduced from hours to minutes.

The most effective safety devices are used. The air heating equipment is electronically controlled, protecting the installation from any possible kind of flame, fuel, power, or mechanical failure. The input of fuel to the heating system is regulated according to the demand of the main temperature recording controller whose actuating



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bulb is located in the oven zone. Other protective controls prevent the system from exceeding safe operating temperatures, and prevent temperature build-up anywhere in the system.

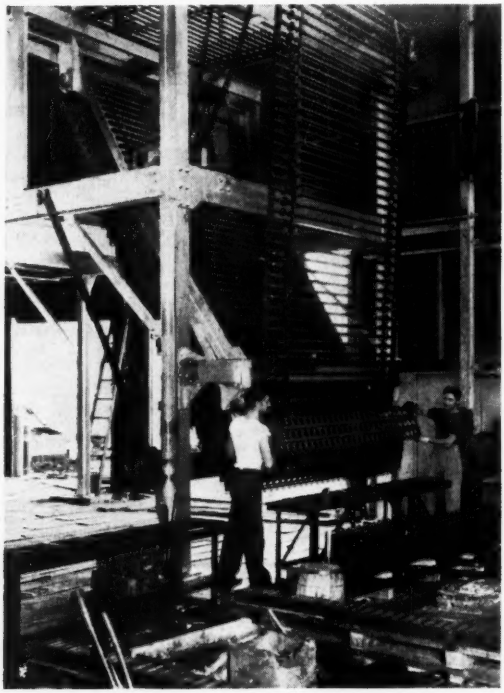
The quality of the finish obtained from this system has been declared excellent, meeting the most exacting Government specifications. Reasons of camouflage dictate a standard olive green finish, which, with the open design of the landing mat sections, gives to the completed assembly the appearance of any terrain on which it is used.

The conveyer of the finishing system is of continuous cross-bar construction and is powered by a 2 h.p., 1,200 r.p.m., explosionproof motor. The agitated dip tank is constructed of ¼-inch steel plate and has approximately 1,500 gallons capacity. Proper solvent and pigment dispersion is assured by the specially constructed agitator blades, mounted on a through shaft at the bottom of the paint tank. The vapor-type degreaser is built to accommodate 30,000 lb. of steel per hour and is of 10-gauge steel plate, structurally reinforced.

The oven air heater is of a direct gas-fired, recirculating type, with a combined output of 3,000,000 B. T. U. per hour and an air capacity of 16,000 c.f.m. at 1½-inch cold static pressure. The fan is a double width, double inlet centrifugal type, powered by a 7½ h.p., 1,800 r.p.m., explosionproof motor. The two burners operate in tandem and are arranged for natural gas at low pressure.

To ensure positive and safe fume removal, the exhaust system is equipped with a single width, single inlet exhaust fan with a capacity of 13,000 c.f.m. at ¾-inch static pressure, this volume being based on 1¼ gallons of naphtha per minute. The fan has a non-sparking V-belt drive and a 3 h.p., 1,800 r.p.m., explosionproof motor. The cooling unit has a ventilating fan of approximately 10,000 c.f.m., with a 5 h.p., open frame, 1,800 r.p.m. motor.

The temperature controls include a recorder controller, high limit controller, and solenoid type temperature valve with built-in by-pass and a low flame adjustment. Air from the 14 x 13 x 6⅓-foot cooling zone is carried by suitable ductwork to the exhaust



Close-up view of the unloading end of the conveyor, with a partially completed floor type conveyor for carrying the mats to freight cars in the foreground

Pennsalt EC-10 does a quick, thorough job

Oils, greases, metal chips and shop dirt are quickly removed from steel bomb fuse plugs in the precleaning process with Pennsalt EC-10. Pennsalt K-7 is used in the subsequent Anodic Cleaning process.

This combination makes it possible for each eight hour shift to produce an average of 9700 fuse plugs with only 1/10 of 1% rejects—a step up in production of 15%.

The following is the actual case history of this operation.

FUSE PLUGS
(BOMB)

PENNSALT EC-10 AND PENNSALT K-7 CLEANING PRIOR TO ZINC PLATING AND IRIDITE DIP

PROBLEM To clean steel bomb fuse plugs free of oils, greases and filings prior to zinc plating and subsequent "Iridite" dip coating.

EQUIPMENT USED A 200 gal. solvent dip tank followed by a spray rinse and a 325 gal. reverse current alkali cleaning tank followed by a dip rinse tank.

METHOD

PART 1—PRECLEANING

1. Use Pennsalt EC-10 concentrated, room temperature; soak for 30 seconds.
2. Cold water spray rinse.

PART 2—ANODIC CLEANING

3. Use Pennsalt K-7 at 50 to 100 amps./sq. ft. at 8 oz./gal., 200° F. for 30 seconds.
4. Hot water rinse.
5. Muriatic acid dip.
6. Cold water rinse.
7. Zinc Electroplate.
8. Hot water rinse.
9. Hot "Iridite" dip and then dry air.

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Illustration showing the burner end of the high capacity air heater

air cooling fan. To ensure maximum safety in operation, safety control features include an electronic safety relay system, a time delay relay system, solenoid safety and pilot valves, and two suction type air-flow switches, one on the exhaust duct and the other on the air heater.

The oven shell consists of 3-inch 20-gauge rockwool-insulated steel panels. Ductwork is 18 and 20-gauge reinforced black iron.

P-80 "Shooting Star"

THE recently announced jet fighter —the P-80 "Shooting Star" — is claimed to set unprecedented standards in many ways, not the least of which is the ultra-smoothness of all external surfaces. This is achieved largely through the use of a Du Pont air-foil pyroxylin lacquer which is buffed and rubbed to polished-glass smoothness. The significance of such a surface can be seen in the fact that air resistance increases as the square of the speed, and the P-80 is believed to be the fastest fighter in existence.

In addition to the smoothness of this light gray topcoat, exposure tests indicate that it is extremely durable. To allow the exceedingly fast-drying lacquer to flow out to a smooth film, a special thinner was evolved by Du Pont chemists.

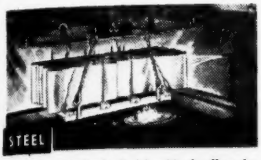
Further, to reduce air resistance, all external rivets of the plane are countersunk and machined. Aircraft type putty is used to fill all dents and cracks. Over this a liberal coat of surfacer is applied and rubbed, sanded, and polished. Finally, the air-foil lacquer topcoat is sprayed, buffed, and polished.

Chromium Plating on Aluminum

CHROMIUM may now be deposited electrolytically onto aluminum or aluminum alloys by means of a simple method, known as the "Preplating Process," developed by the Technical Processes Division of Colonial Alloys Co., Philadelphia, Pa. Chromium deposits of considerable thickness can be made directly onto the aluminum surfaces or follow copper, nickel, zinc, or cadmium plating. The procedure for hard or decorative chromium finishes is the same as followed when plating on other metals with the exception that aluminum requires special surface preparation.

The aluminum is thoroughly cleaned as prescribed, passivated, immersed in preplating solution for a few seconds, and then electroplated in the usual manner, using the regular equipment found in all plating shops.

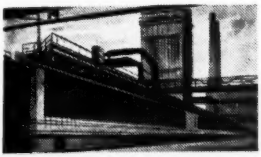
SPECIFY "GENERAL CHEMICAL"



PICKLING—Sulfuric Acid—Hydrofluoric Acid—Muriatic Acid—Nitric Acid—Phosphoric Acid—Chromic Acid.

Detergents: Sodium Metasilicate—Trisodium Phosphate—Sodium Silicate—Tetrasodium Pyrophosphate.

RIMMING STEEL—Sodium Fluoride for smoother-surface rimming steel.



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Sodium Cyanide—Sodium Fluoride—Sodium Cyanate—Potassium Cyanate.

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Vapor Degreasing Aluminum Parts

By E. P. TROEGER

ALUMINUM and aluminum alloys will be available in vast quantities when military requirements slack off and finally cease to exist. For a consumer public, starved for new things, these should form one of the basic materials of our postwar life. Designers' fingers have been itching even more than war distracted manufacturers for the go-ahead signal but, unless the more complete knowledge of our war lessons is made public, new manufacturers of aluminum products will find some pitfalls.

Aluminum is one of the most obedient of metals, particularly in matters of forming. However, most forming operations require the use of lubrication and this oil or grease must be removed from the parts at some later stage of fabrication. Most of the new attractive integral finishes now being placed on aluminum for decorative purposes, such as multicolored and intricate anodic designs, demand an immaculate cleaning prior to processing. At present, vapor degreasing has been found suitable for removal of oils, greases, resins, waxes, rouges, and metal chips from parts after hydropress forming, stamping, threading, grinding, or polishing prior to finish treatments.

Stabilized trichlorethylene covered by Army-Navy Aeronautical Specification AN-T-37 is intended principally for use in degreasing metal parts and dry cleaning fabrics and clothing as well. In addition, this solvent is said to be satisfactory for the cleaning of many special materials where aqueous alkalines are dangerous and chlorinated hydrocarbons may be used with immunity. Trichlorethylene has a boiling point of 188 deg. F., specific gravity of 1.5, and specific one fourth that of water. Vapors of the trichlorethylene are four and one half times as heavy as air and are therefore readily controlled. Trichlorethylene has a toxic effect at concentrations of 2,000 parts per million and has had fatal effects at 4,000 parts per million. The low surface tension of this solvent greatly facilitates its rapid penetration into pores, seams, and other crevices where other cleaners have proved incapable of penetration and thus were unable to remove the grease.

Aluminum and aluminum alloys in contact with ordinary unstabilized chlorinated degreasing solvents and moisture sometimes promote decomposition of the solvent, with the subsequent formation of hydrochloric acid. Such a solution condition is known as being "sour." This decomposition is generaly charged to photochemical decomposition; namely, the effect of ultra violet light in the presence of oxygen. However, it is well known that other acids introduced into the solvent forming oils and other sources exert a catalytic effect on the trichlorethylene decomposition and with the aid of any moisture present will form hydrochloric acid. The resultant loss of efficiency and subsequent detrimental attacks on the metal parts of the degreaser have led to the development of stabilized materials. The stabilizing agent present maintains the solvent with a safety margin of alkalinity vital in preventing sourness when cleaning aluminum and aluminum alloys. In the cleaning of steel, brass, cadmium plating, and so on, little trouble, however, is encountered.

The stabilizing agent present, usually in concentrations of about 0.1 per cent, is generally an aliphatic amine or a mixture of several amines with a distillation range slightly above that of the solvent to avoid excessive loss during operation. Acidity-alkalinity test samples will vary when taken from fresh condensate, depending upon the rate of flow of work through the degreaser or the working temperature of the bath. This in turn influences the distillation of the stabilizing agent. The stabilizing agent of a popular name product distills over entirely when the solvent is heated to a temperatur from 200 to 240 deg. F., and increases the capacity of the distillate for neutralizing acids as the temperature increases. For these reasons, acidity-alkalinity determinations should be evaluated only with full knowledge of the operating conditions.

The decomposition of trichlorethylene with the resultant formation of hydrochloric acid to give this sour condition may be remedied only by complete removal of the solvent from the tank by distillation, and by a thorough scrubbing of the lines with a soda ash solution. The tank must be thoroughly dried and free of moisture prior to refilling the degreaser with new solvent. The use of small bags containing sodium carbonate hung in the solution areas of the tank or materials which chemically combine with water to remove the moisture from the solvent have proved very beneficial.

The frequency of distillation depends upon the amount of dirt accumulated by the machine and the opportunity for distillation. Degreasers usually require cleaning at least every two weeks or when the temperature of the boiling liquid has increased to 200 to 204 deg. F. This temperature is a sure indication of a high degree of contamination.

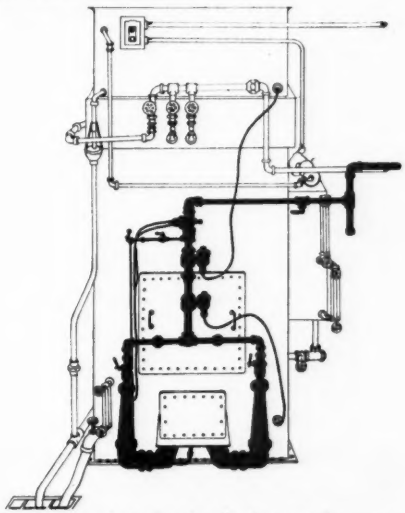


Fig. 1—Drawing of a standard vapor degreaser installation

General Description of a Vapor Degreaser and Operation

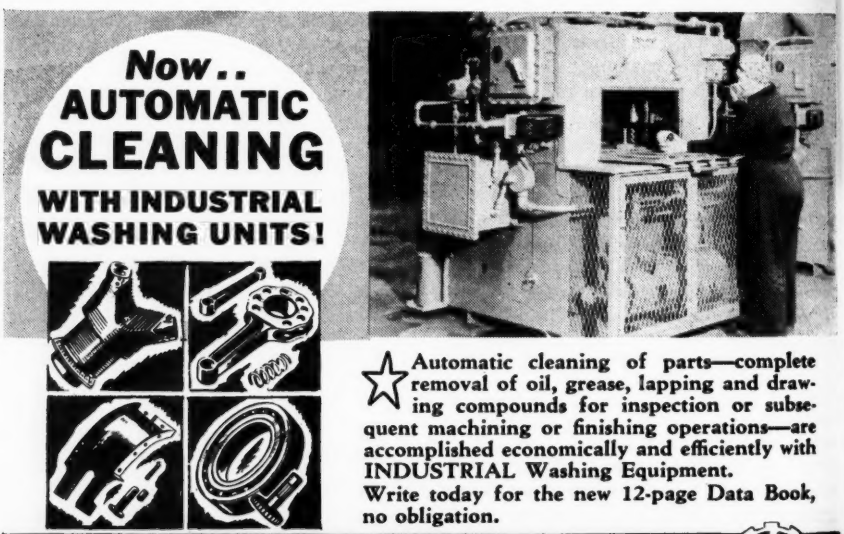
The drawings show a standard degreaser as installed and in operation. The gas heating system receives the fuel through the black pipe at the right of Fig. 1. All the fittings in black in the drawing pertain to the gas heating system. The first valve encountered is the primary gas line valve controlling the introduction of the fuel to the operation. The valve, as indicated, is in the "on" position. Traveling to the center of the degreaser and turning toward the bottom, the first thermostatic valve of the gas manifold is reached. This valve is operated by the thermocouple at the pilot flame, the thermostat of which may be traced to the bottom of the degreaser.

On the manifold line and immediately below this valve is the pilot supply tee. From this tee, the pilot line, with its valve open, parallels the thermostat which has already been traced. The middle thermostatic valve is controlled by the temperature above the condenser tubes, its thermostat entering the tank at the upper right. The lower thermostatic valve is controlled by the temperature of the boiling liquid.

Continuing to follow this gas line the tee is reached which distributes the flow to the right and left burners. Individual adjustment of burners is controlled by their individual valves, permitting proper combustion in the fire chamber.

Water System

The water enters the system through the pipe below the black fuel intake and rises toward the top of the tank installation. Here three valves distribute its flow; the valve at the left controls the coil condenser; the other two valves control the flow to the two sections of the water jacket. Two



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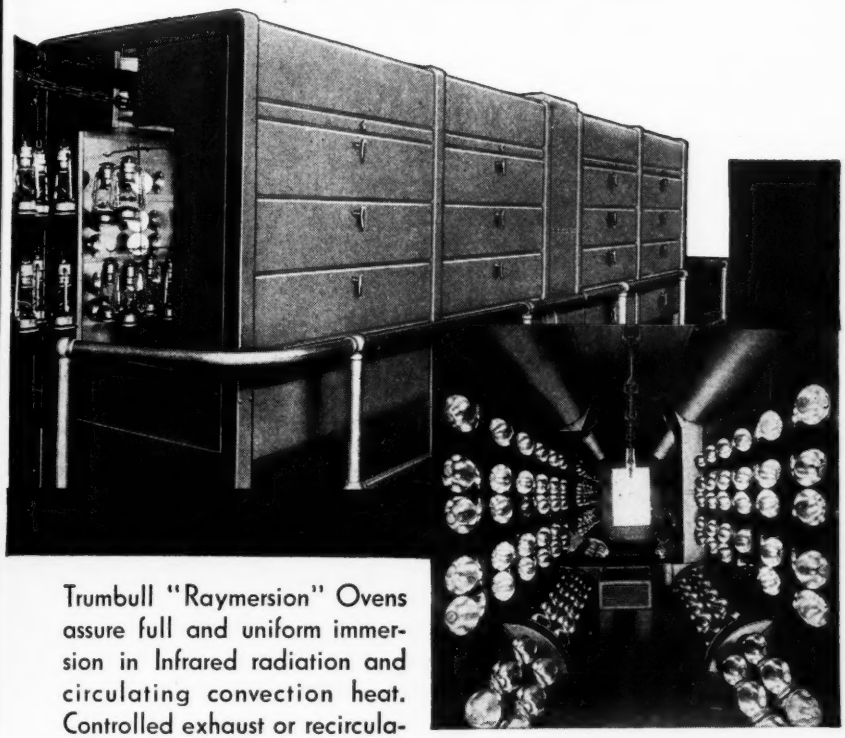

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small adjusting valves are located directly below the last two named flow valves. The water from the condenser leaves by way of the sight funnel on the left of the installation and drains into the water jacket's drainpipe which comes from the far face of the machine and appears at the lower left of Fig. 1 where it flows into the sewer drain.

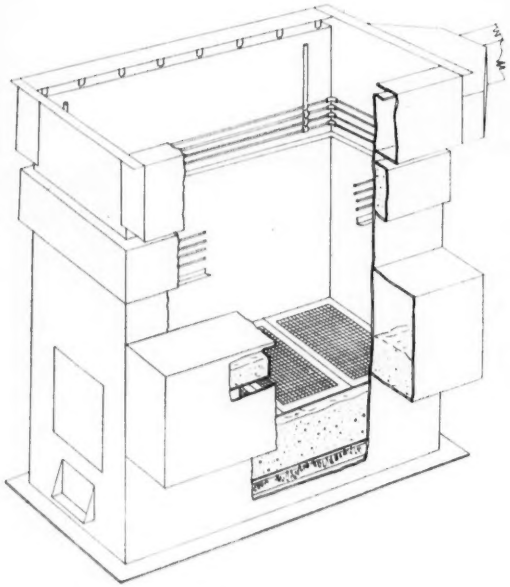

Fig. 2—Drawing of vapor degreaser with portion cut away to illustrate the function of the unit in vapor degreasing parts

In normal operation, the throttle valve to the condensing coils is adjusted so that the temperature of the water at the sight funnel is between 90 to 105 deg. F. The water jacket valves are set in the fully open position and the small adjusting valves under them are set to maintain a 95 to 105 deg. F. temperature at the outlet (not shown in Fig. 1). Valves, after this adjustment, are locked to eliminate the need for constant resetting.

Electrical System

The electrical conduit enters the degreaser at the upper right and leads directly to the pump control switch. The conduit-contained wires to the pump parallel this lead-in and then descend to the pump. This pump feeds the condensed solvent to the spray nozzle by the small pipe running from the end of the pump, across the tank, and then up to the entrance into the tank along side of the electric switch.

Sight Glasses

The sight glasses on the right side of the installation indicate the amount of distilled solvent in the storage tank and the spray reservoir. The one at the lower left shows the level of the boiling chamber. Under normal operating conditions, the solvent level should stay at a two-thirds full position and should not be permitted to vary over 1½ inches either way from this level.

Storage Tanks

The storage tanks retain the distilled solvent as it flows out of the condensing trough and are located below the spray pump. The valve on the pipe beneath these tanks controls the flow back into the boiling chamber and is closed when distillation is required.

The solvent drain is at the lower left near the solvent sight glasses, while the cleanout door for the solvent tank is in lower center above the burners.

Figure 2 shows a cutaway view of the complete degreaser unit. In this view may be seen the small overflow tank from which the solvent is pumped. This tank receives the distillate

UNTREATED ZINC
—No "life" in the finish—easily tarnished.

CLEAR ANOZINC
— it's got zip — stays clear and bright.

YELLOW ANOZINC
— for applications where a slightly iridescent yellow is desired.

BLACK ANOZINC
—use it where you want a deep, lustrous black.

Unretouched photo shows the slight effect of constant handling over a period of 18 months on pieces treated in the Anozinc bath. Zinc plating identical on all pieces.

When zinc plated parts are finished in a Clear Anozinc bath they keep their sparkle and "zing"—as the photo above shows. It's an inexpensive anodic treatment that retains the appearance of new zinc plating—holds its lustre and attractive appearance—extends its resistance to corrosion and handling—*immeasurably.*

So why use a quickly tarnished finish when this fast, simple procedure will keep your zinc plate dressed up—at low cost? Use the Clear Anozinc bath to produce a finish that's an able pinch-hitter for chromium or cadmium—or wherever better appearance and a more durable zinc surface makes your products more serviceable. Write to the nearest office for further information, giving a brief outline of your application.

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CHROMIUM PLATING for wear-resisting, oil-retaining and other types of finishes.

☆**UNICHROME ALKALINE COPPER** for smooth, lustrous copper plating in a non-cyanide bath.

☆**UNICHROME STRIP** for speedy removal of copper, chromium, zinc, etc., from steel and cast iron without etching the base.

☆**UNICHROME RACK COATINGS** specially formulated to stand up under the most severe operating cycles.

☆**UNICHROME STOP-OFF LACQUERS AND COMPOUNDS** specially formulated to meet specific plating problems.

☆**UNICHROME CLEAR LACQUERS** specially formulated to meet specific finishing requirements.

☆**UCILON**—a corrosion-resistant coating for protecting surfaces against acids, alkalies, water, gasoline and various corrosive chemicals.

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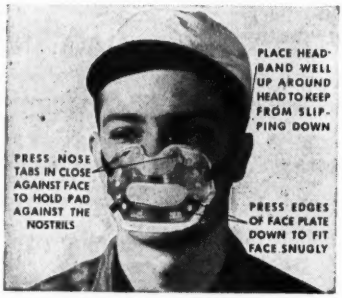
Weigh Less Than ½ oz.


PLACE HEADBAND WELL UP AROUND HEAD TO KEEP FROM SLIPPING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

Not Recommended for Toxic Dusts or Free Silica

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Masks	$0.25 each
No. 1 Refills (std. weight)	.01½ each
No. 2 Refills (heavyweight)	.02 each

Masks packed in individual envelopes.

Refills packed in envelopes of 25.

The No. 2 Refills contain twice as much filtering cotton as the No. 1.

Write for Bulletin 348 showing quantity discounts on orders of $5.00 and over

If payment accompanies order we will pay parcel post or express charges. Minimum order for C.O.D. or charge account $2.00

Martindale Electric Co.

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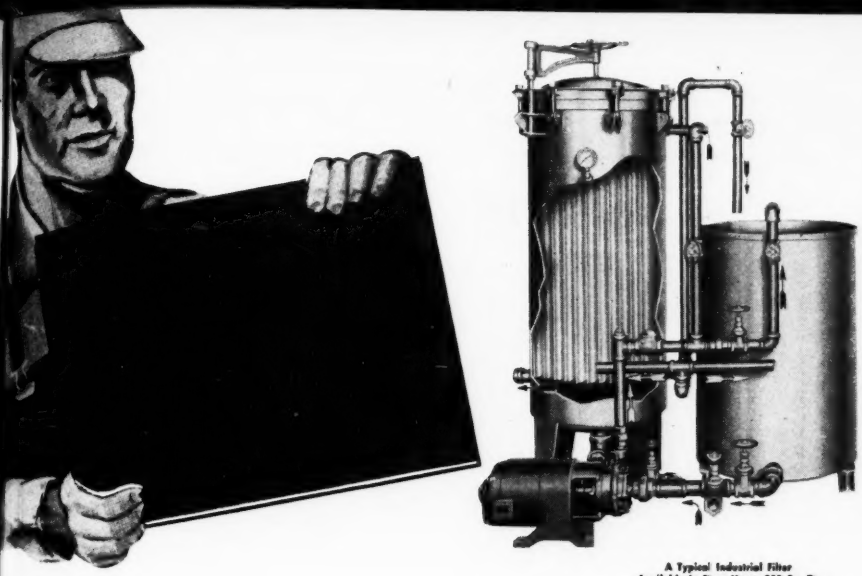
from the water solvent separator, the excess solvent overflowing into the distillate storage tank. The water solvent separator is fed from the distillate trough, the amount of solvent flow being valve controlled. The separator is vented back into main tank and the water drained by means of a faucet.

Any fumes which are not condensed by the water jacket or coils are removed by a continuous flow of air across the top of the tank, sucked up into the air duct and discharged to the outside atmosphere.

The degreaser in operation is best described from Fig. 2. Here, the burner-supplied heat vaporizes the solvent, which, passing through the grating, fills the tank with vapor to the vapor line. Parts to be degreased are lowered into the tank so that they are below this vapor line. The vapor condenses on the room-temperature parts immediately, attacks all soluble greases and drops off the bottom edges of the parts, carrying the dissolved grease with it, through the grating to the solvent tank. The cleaned parts are lifted from the tank and, because of the nature of the solvent used, are dry and ready to be handled with gloves at once. Gloved hands are specified so that fingerprints will not mar the chemically clean surfaces.

The greater portion of the vapor in the tank does not come in contact with the parts being cleaned. It is condensed by the water coils and the water jacket, collected by the distillate trough and from there fed into the water separator.

Parts are held within the degreasing tank from a matter of seconds to a few minutes, depending upon the tank capacity and the surface areas to be cleaned. Materials which have a high rate of heat transfer are usually immersed several times, allowing the material temperature to decrease sufficiently between immersions to per-



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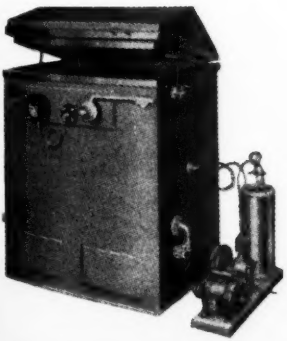
Industrial Plating Solution Filters are now coming equipped with AIRWASH — the new cleaning device that does a thorough job in a few minutes without opening the filter. You will welcome this new labor saving method of cleaning filters. The Industrial AIRWASH Device does a complete job of removing cake and sludge from filter cloths. There is no loss of time before starting the new filter cycle. Industrial Filters are furnished in sizes and models to fit your needs. Ask for our recommendations on the proper equipment to do your job better.



SALT FOG
Corrosion Test Equipment

This modern instrument is designed to meet all requirements of latest "Salt Fog Testing Procedure Specifications" to determine corrosion resistance of plated, coated, lacquered or painted parts.

Serious rejection losses on industrial finishes which must meet Army or Navy specifications are avoided by systematic tests with Industrial Salt Fog Test Equipment.

STANDARD SIZES

No. 1—48" long	**26" wide**	**36" deep**	**No. 3—30" long**	**18" wide**	**30" deep**
No. 2—36" long	**24" wide**	**30" deep**	**No. 4—24" long**	**15" wide**	**30" deep**
		No. 6—14" long	**12" wide**	**12" deep**	

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mit further condensation washing. Properly operated, this process presents a surface cleaned of greases entirely. However, portions of forming rubber clinging to the parts are seldom removed, particularly if they are burned on in the forming. This condition calls for other treatment and cannot be construed as a reflection on the degreasing process.

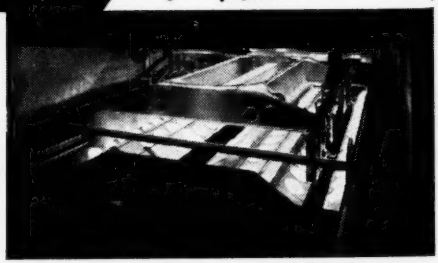
Haveg Tanks. Bulletin F4 containing complete data on the chemical resistance and design of Haveg etching, plating, and pickling tanks is now being offered free by the Haveg Corp., Newark 67, Delaware.

Ferro Production-Proved Colors. A folder containing color chips of 40 production-proved oxides has been prepared by the Ferro Enamel Corp., Color Division, 4150 E. 56th St., Cleveland 5, Ohio. Twenty are strong and stable basic oxides from which hundreds of porcelain enamel colors may be obtained. The other 20 are blended oxides especially selected because of their suitability for many commercial applications. Copy of folder free upon request.

1800 POUND ASSEMBLY DRIED IN 11 MINUTES!

Thanks to Jensen Ovens' Flexible design

The problem at Rex Trailer Company, Indianapolis, was to dry the completely assembled 1800-lb. carriage of a pole trailer. Jensen designed and built a special infra-red oven with lamps banked "angle-and-step." This unique arrangement placed *all* parts of the irregular shaped chassis equal distances from the heat sources. Only flexibility of Jensen "individual shield" design made this accomplishment possible. ★ Write us about *your* problem.



SEE HOW *rays of lamps are concentrated on all parts of chassis. This extra Jensen feature saves more than ⅓ in power costs for Rex!*

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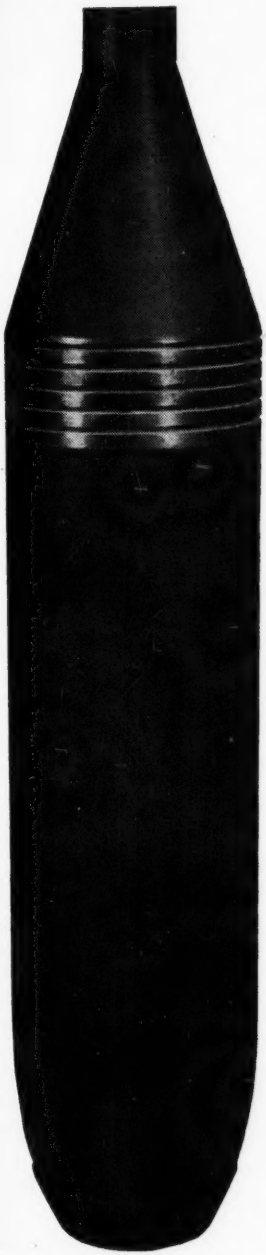

ANOTHER ENGINEERING TRIUMPH

Cleaning and lacquering this 81-millimeter trench mortar shell were delicate operations. In its making, the shell had to be cleaned between each draw. Then, between final rinse and lacquering, *no rust could be allowed to form.*

"How are these jobs to be done?" makers of the shells wondered. Oil couldn't be used to prevent rust—lacquering can't be done over oil. Specifications did not permit a "phosphatizing" operation.

Wyandotte Chemicals Corporation gave the answer with two of its specialized products—a cleaner and a rust preventive. The shells were treated right after the last draw with a special Wyandotte rust preventive. Merely as an experiment, a shell was let stand 30 days, without lacquering. At the end of that time there was not a speck of rust on the metal!

This Wyandotte rust preventive is a powder. It leaves no film on the surface of the metal but literally passivates the steel, thus effectively preventing rust.

Whatever *your* metal cleaning need may be, you are almost sure to find a Wyandotte Product to meet it. Ask the Wyandotte Representative for advice.

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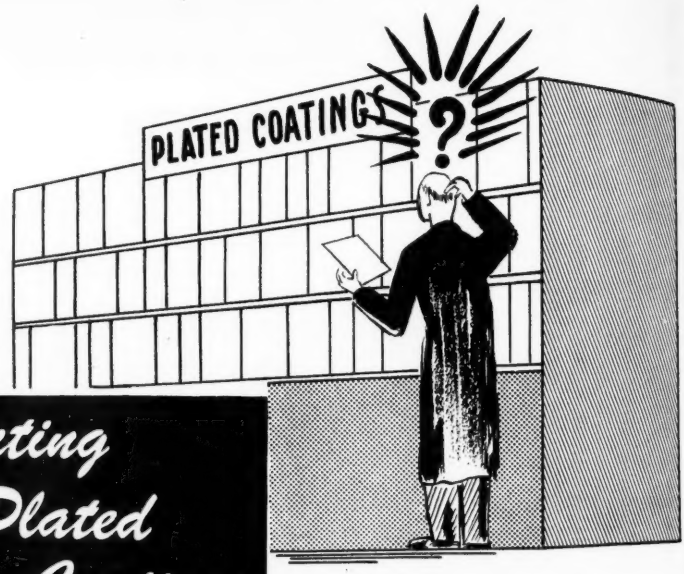

Selecting Plated Coatings

By H. L. FARBER

Supervisor of Control Laboratories, Appliance Division
Westinghouse Electric and Manufacturing Company
Mansfield, Ohio

SOME ten or twelve metals and alloys are in extensive commercial use as electroplated finishes. In addition, many combinations and variations of these metals are being used to obtain coatings to meet special requirements. A number of factors are involved in determining the kind of metal to be deposited and the finishing system to be used, including the use to which the product is to be put, the base material to be finished, the cost of finish to be used, and the facilities required.

Use or Application

The choice of a given kind of plated coating depends to a large extent on the application or use to which the plated article is to be put. Plated coatings are used for decorative, protective, or mechanical reasons, or a combination of purposes. More specifically, a coating may be used essentially for appearance and show; for protection from corrosion or rust; for some mechanical or special purpose, such as wear resistance; for building up an area to correct dimensions; or possibly as a suitable surface for soldering or brazing to other parts. Specialized coatings are used for heat resistance or to resist chemical attack by foods or drugs.

The **decorative coatings** are selected to a large extent on the basis of styles and trends which change from time to time. Brushed or Butler finishes may

be favored for a few years only to be replaced by bright, lusterous polished surfaces on many articles. Even the color style as well as luster requirements change. Just prior to the war, gold was highly favored for name plates and escutcheon plates on cars and refrigerators. In many cases, the plated coatings are used in combination with other finishes and colors, and the color and finish of the plating are chosen to harmonize with or contrast with other finishes which also have their trends. On some products, the same finish is used over a period of many years.

Protective plated coatings may be divided into two classes, depending on the method of preventing corrosion. Cadmium and zinc are used extensively on parts where appearance is not important but where extremely high resistance to rust is desired. These metals are anodic to the base metal and are sacrificed in themselves. The life of such coatings is nearly a linear function of time in the salt spray or corrosive atmosphere to which the coatings are exposed, and depends on thickness of deposit used. This type of coating is usually required on parts which are subject to outdoor exposure or extremely corrosive conditions. Films of 0.0005 inch or less are usually sufficient.

Resistance to corrosion is also afforded by a number of other plated metals which are more inert in themselves and serve as a shield for the base metal. Nickel, copper, chromium, tin, silver, and gold represent this class of protective films. The finishes of this type must be essentially pore free in order to afford protection to the base metal. Thicker coatings are usually required for maximum protection—films

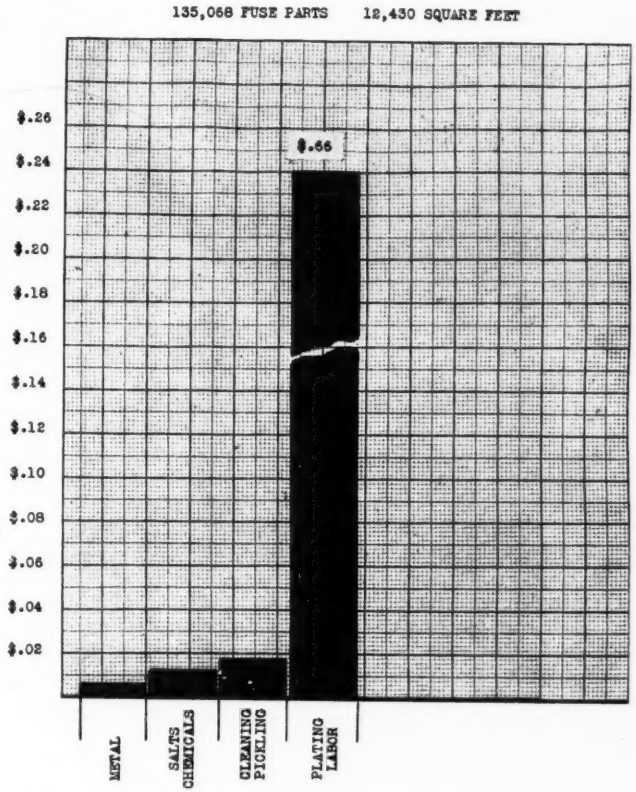

Fig. 1—Breakdown of zinc plating costs for fuse parts. Chart shows the cost of metal, chemicals, cleaning, and plating labor

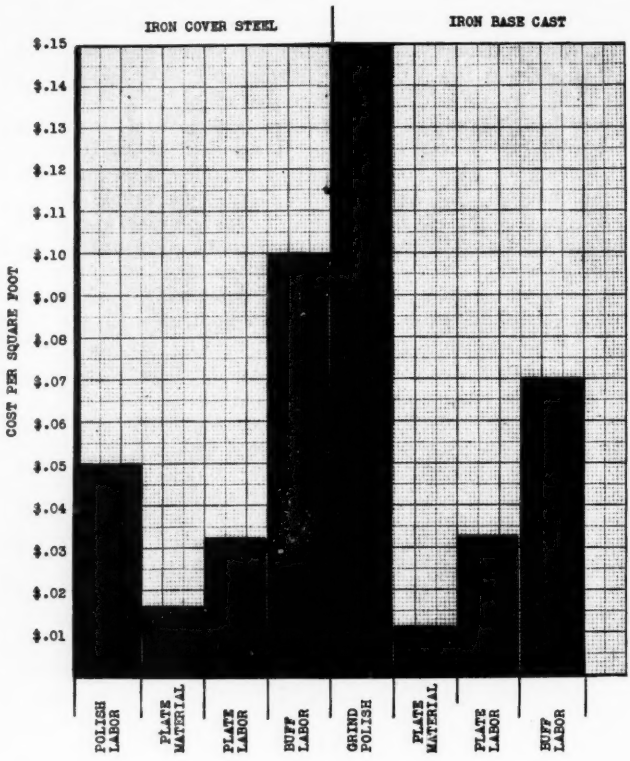

Fig. 2—Breakdown of nickel and chromium plating costs on iron cover steel and on iron base cast

of 0.0005 inch or more often 0.0010 inch thickness being required. Due to their chemical inactivity, coatings of this class are useful in affording excellent protection, in addition to attractive appearance, over long periods of time. However, due to their toxicity, rate of change, and low melting and oxidizing temperatures, cadmium and zinc are not desirable for many uses. Food handling equipment is usually finished with tin or one of the other metals of that type.

Plated coatings have been used extensively for mechanical and other specialized purposes, especially during the war period. Chromium is used for gages, cutting tools, dies, engine cylinders and pistons, naval guns, aircraft bearings, radio parts, and so on. Due to its hardness and wear resistance, chromium is most widely used, however, metals such as copper and nickel are also used to build up dimensions on worn or improperly machined parts where expensive or scarce parts justify salvaging by the use of plating. Plating with silver and tin aids in the performance of soldering operations, while copper or silver platings are used to prepare steel surfaces for brazing.

Base Metal

The base metal composition and the size and shape of the part determine to some extent the type of metal to be used. Some metals are not plateable or require special processes. The aluminum and zinc metals and their alloys are in this class. Other finishes are sometimes more desirable on these metals as, for example, anodizing for aluminum and Cronak treatment for zinc.

The surface properties of some base metals preclude the use of certain types of plated coatings. Bright nickel and zinc plating, for example, do not

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always work to advantage on cast iron parts. Chromium alloys are difficult to plate with most metals except chromium. The size and shape of a part should receive some consideration in choosing a plated coating. This is important since current requirements and throwing power vary with different metals. Cadmium, which costs approximately 95 cents per pound, has better throwing power than zinc, which costs approximately 16 cents per pound, and may be more economical in overall cost when used on irregularly shaped parts where special racking and inside or auxiliary anodes are necessary in order to use zinc.

The corrosion properties of the base metal must be considered in choosing the coating. Parts made from non-ferrous metals, such as brass and copper, will normally require less protection than those made of iron or steel.

Costs

Another important factor in selecting plated coatings and finishing systems is the cost of the finish to be used. On the basis of metal cost alone, the different metals cover a range of from approximately 6 cents for zinc to approximately $50.40 for gold for coatings of one thousandth of an inch on a square foot area. (See Fig. 1.) Theoretical metal costs are not the complete story in plated finishes since the labor and chemicals used in the operation usually represent more cost than the metal deposited. It costs roughly 46 cents to apply the nickel and chromium finish on an electric iron but of this amount 20 cents or 44 per

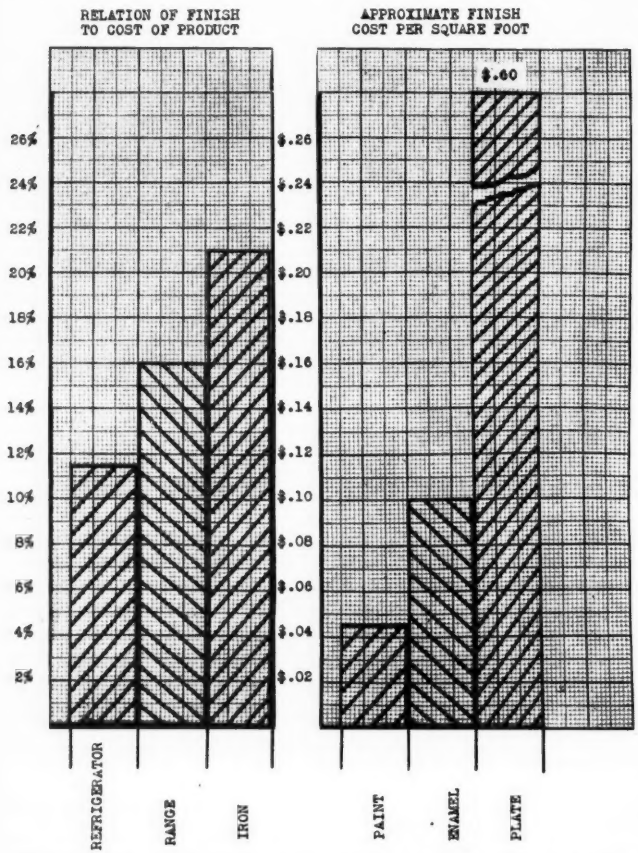
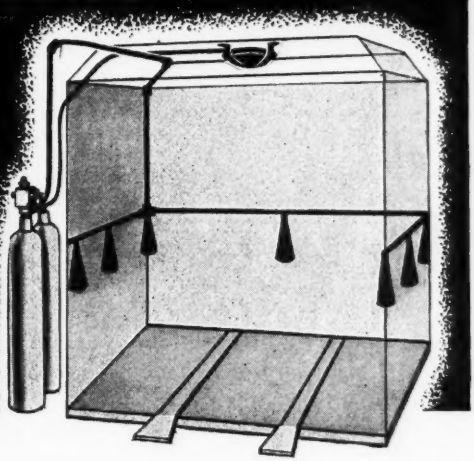


Fig. 3—Comparison of the finish cost of paint, enamel, and plating, and the relation of finish cost to the cost of the end product on refrigerators, irons, and ranges

and Spray Booths

OR quickly installed in your present equipment



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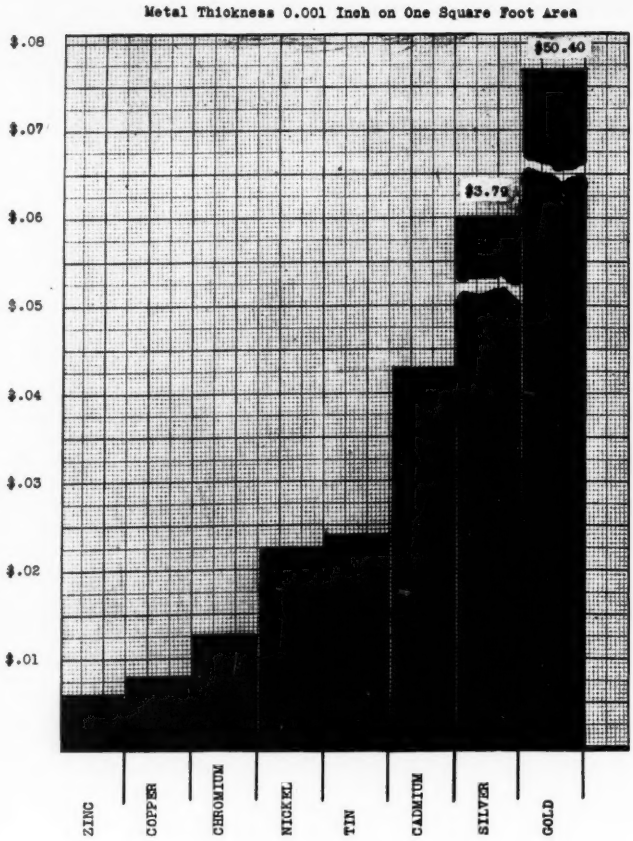

Fig. 4—Metal cost per square foot for various metallic coatings

cent is for grinding and polishing, 2.7 cents or 6 per cent is for plating materials, 6.5 cents or 14 per cent is for plating labor, 17.1 cents or 36 per cent is for buffing and coloring. The size, shape, and special requirements of a given part are factors in the plating cost. On a small zinc plated fuse part where the plating requirements are high and the part is intricate in shape, the finishing cost for metal is less than that for other materials used in the operation and much less than that for plating labor.

Other finishes are used alternately with/or as substitutes for plating. The choice of finish may involve many factors. Cost as well as properties of the finish has a bearing on determining whether plating is more desirable than some other finish. A comparison of finishing costs of three products having different finishes shows what part of the product cost is due to finish and the relative costs of different finishes. (See Fig. 3).

Equipment and Facilities

Since electroplated finishes involve the use of mechanical, chemical, and electrochemical processes, a number of operations are involved. The equipment and facilities required depend on the volume of production and the type of finish used. Where large continuous production is involved, it is possible to use automatic equipment and thereby reduce costs for both labor and material.

Equipment of this kind requires long range planning and development work. It is always necessary in deciding on a certain finish to also consider all equip-

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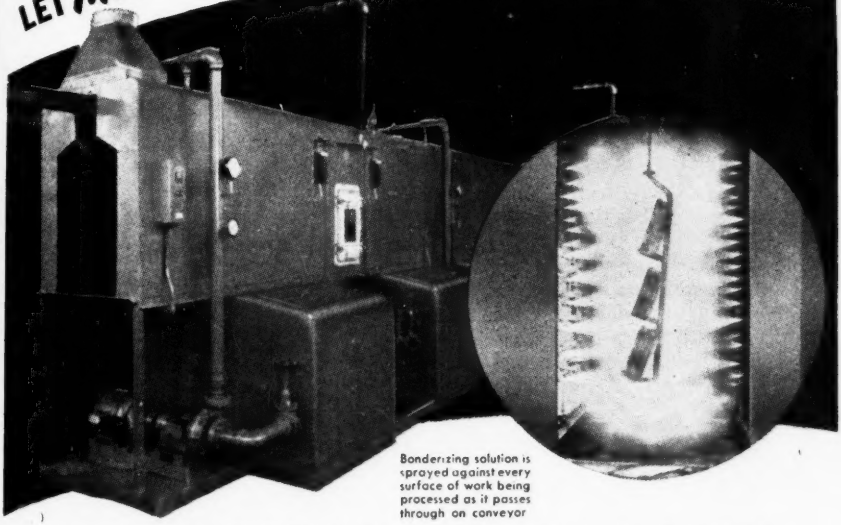
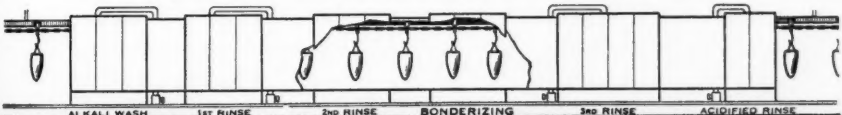


Bonderizing solution is sprayed against every surface of work being processed as it passes through on conveyor

For as many years as *Bonderizing* has been in use, Mahon engineers have been planning, producing and installing equipment essential to its proper application. Hundreds of Mahon-engineered installations are now in operation. Whether you require a bonderizing unit to fit into your present production line—or whether you desire an entirely new and modern finishing system—you can completely rely upon the knowledge and experience of Mahon engineers to design and build equipment that will conform to your plant and products.

Typical Mahon Bonderizing installation. Next steps in production are through Drying Oven, Spray Booth and Baking Oven, also designed built and installed by Mahon.



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ment necessary to produce the finish. This may involve polishing and buffing facilities, cleaning and processing tanks, ventilation equipment, generator and control equipment, plating racks, steam, water, air, and floor space. The facilities vary with the type of finish used. For example, chromium plating requires as much as ten times the current producing equipment of other plated finishes. This means additional investment in generators.

In conclusion, it should be realized that, due to the many factors involved, it is not possible to write a formula for selecting plated finishes. Also, the establishment of the finish to be used on a product is the joint responsibility of the sales department, which establishes the customer's demand, the engineer, who determines the product requirements, and the manufacturing department, which determines the finish it can consistently and economically produce.

B. F. Goodrich Industrial Rubber Gloves are the subject of a four-page catalog section published by The B. F. Goodrich Co. Akron, Ohio. A feature of the folder is a page devoted to illustrated instructions on how to obtain the maximum service from acid and industrial rubber gloves. Methods of manufacturing the gloves by the Anode process are also described. In addition, a page is devoted to the company's line of plastic treated industrial aprons. Copy of Catalog Section 9035 free upon request.

"Batch Cleaning in Portable Metal Washing Machines for Production Maintenance and Repair" is the title of a four-page bulletin issued by the Optimus Equipment Co. 161 Church St., Matawan, N. J. The bulletin illustrates and describes portable machines of the dip-agitating type (single and double load) and the spray type, all of which can be used for cleaning, washing, paint stripping, rust prevention, rustproofing, rinsing, chemical treatment, coating, and so on. Copy of Bulletin 4E2 free upon request.

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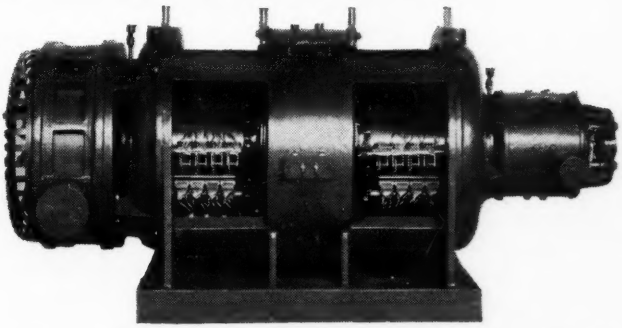


Illustration shows: Standard Design 1000 to 4000 ampere capacity Electric Products Motor-Generator.

You Are Insured Lower Plating Costs From—Higher Efficiency . . . Power Factor Correction . . . Close Voltage Regulation . . . Long Life Expectancy . . . And Low Maintenance Costs . . .

. . . these factors are all of prime importance in the electroplating process. Each contributes materially to the production of a complete lasting, attractive finish at minimum cost. Built into the Electric Products Motor-Generator are the inherent characteristics that insure all of these factors:

1—The scientific balanced design, superior all-welded construction, reduction of friction losses from ball bearings, and absence of contact resistance account for unusual records of high efficiency in the Electric Products electroplating generators.

2—The synchronous driving motor provides a low cost means of correcting power factor which reduces power costs and relieves the power lines of excessive loading.

3—The maintenance of a constant voltage at all loads provides a scientific method of maintaining a controlled thickness of deposit on the plated surface and reduces time to produce the finish.

These features, plus minimum maintenance and long life are some of the reasons why the Electric Products Motor-Generators are preferred equipment for Electro-Plating and Anodizing.

For Complete Details Write for Bulletin No. 92

The Electric Products Co.

1741 CLARKSTONE ROAD · CLEVELAND 12, OHIO

The Nylon Bristle Paint Brush

By ELWOOD M. JONES, JR.

Sales Manager, Paint Brush Division
Rubberset Company, Newark, New Jersey

BEFORE the first World War, paint brushes of the better type were manufactured almost entirely of Russian hog bristle. Shipped in large casks of assorted colors and sizes, it required the highest type of skill to sort and separate these bristles according to color, size and texture. The first World War interrupted the flow of supply of these Russian bristles. The brush making industry was forced to make its first great change. Chinese hog bristles were used and found to be superior to the Russian. The bristles were sorted before shipment and were, for all practical purposes, uniform in length and texture, depending on the Chinese province in which they originated. Today, the pure China bristle brush is the accepted standard for the highest type of paint brush, although at the present time pure bristle brushes are not obtainable except in very short lengths.

Another Change Is Here

Some time ago, a few of the more far-sighted brush manufacturers determined to discover whether or not any improvement could be made on Chinese hog bristle brushes and also whether a satisfactory synthetic bristle could be manufactured. The first step was to determine which of the many proposed materials had the best chance of superseding the natural hog bristle. In 1940 technicians of Rubberset Company tested a wide variety of natural and synthetic bristles in their search for a material possessing all the desirable characteristics, including elasticity and resiliency, paint retention, durability, uniformity and resistance to paint solvents. Nylon was found to meet these specifications.

Having decided on nylon, the next step was to perfect these new bristles. Many problems had to be overcome. The natural bristles were found to develop a tip after they were broken in. Tests proved this tip to be more important in laying down a smooth uniform film than the original flag on the bristles. A most effective method of pre-tipping the nylon bristle was discovered and, as a consequence, the nylon bristle brush will be delivered already broken in. The question of the "feel" of the brush, the type of film laid down, the pickup and delivery of paint and the durability were all scientifically analyzed and approached with the idea in mind of bettering, not equalling, the best Chinese hog bristle brushes obtainable.

After four years of research, the nylon brush has been found to possess unusual wearability. The feel and spring of bristles can be controlled to suit the most exacting painter. The film laid down by the nylon brush is smooth and uniform. The nylon bristle

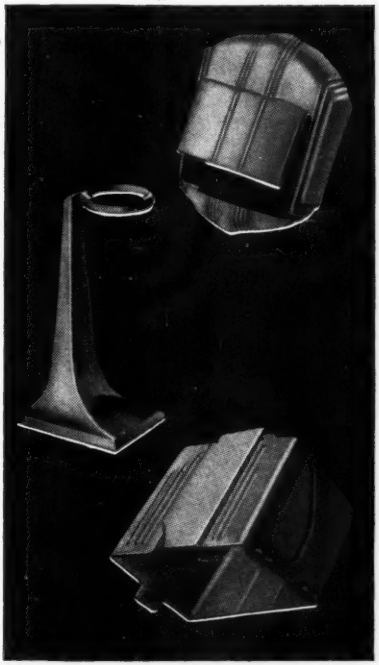
BONDERITE 32

Inhibits White Corrosion on Diecast Parts

The same added qualities of a better paint-holding surface and corrosion resistance, which Bonderizing has brought to iron and steel, are available for zinc, zinc alloy or cadmium surfaces, with Bonderite 32.

Without materially affecting mechanical dimensions or apertures, threaded or intricate parts, its chemical action and resulting protective coating occurs wherever the solution penetrates.

This Bonderite coating on zinc and cadmium is often used as a final and only finish for protection from corrosion. In other cases it is used as a base for applied organic finishes. The Bonderite coating is insoluble in water and is not affected by heat encountered with baked finishes.



PARKER RUST PROOF COMPANY
2172 E. MILWAUKEE AVE. • DETROIT 11, MICH.

HOLDS PAINT TO STEEL INHIBITS RUST RETARDS WEAR

PARKER PRODUCTS CONQUER RUST

brush does not have the pick-up capacity of the pure bristle brush but the percentage of efficiency in the volume of paint laid down by the nylon bristle in direct ratio of pickup to delivery is said to be better than the pure China bristle.

More important, the paint carrying capacity of the nylon bristles increases with use. This is of tremendous importance to the painter. It means that the nylon brush gets better mileage the longer it is used and it is said to wear over five times as long as brushes of hog bristle.

"The Facts on Polymerin" is the title of a 32-page illustrated booklet issued by Ault & Wiborg Division of Interchemical Corp., 350 Fifth Ave., New York 1, N. Y., which explains in detail how Polymerin speed-bake finish has increased production speeds and provided a more durable finish for leading products of nine major industries. Copy free upon request.

Plastics—Scientific and Technological. By H. Ronald Fleck. Published by Chemical Publishing Co., Inc., 26 Court St., Brooklyn 2, N. Y. 352 pages. Illustrated. Cloth binding, board covers. Price, $6.50.

This up-to-date and comprehensive book covers the scientific and technological aspects of the ever-growing plastics industry. It comprises a critical survey of the literature and a correlation of scattered data which should be of value both to chemists of the plastics industry and to the practical men whose work requires the knowledge of the chemistry and technology of plastics. The book is also particularly suited as a text for college courses on plastics. The description of reactions and details of procedure, complete to the last proportion and temperature, should be found useful in conducting plastic research both in colleges and industrial laboratories.

The newest developments in plastic materials both in the United States and in Europe are discussed in great detail. The book is replete with useful tables, diagrams, and data of interest primarily to technicians, chemists, professional men, and students who are seeking more than an elementary text on the subject.

CLEANING PROCESS THAT GETS RESULTS

No other type of metal cleaning equals the Blakeslee "Solvent Vapor" method in fast, economical removal of oil and grease from metal surfaces including cracks, pores, seams, and hidden crevices of machined parts, stampings, assemblies, etc.—in preparation for inspection, assembly, heat treating, pickling or plating.

Until you talk to a Blakeslee representative, you may not realize the profitable advantages that Blakeslee equipment may offer in terms of your own degreasing needs . . . There's a size and style for every type of industrial degreasing. Write today for your copy of our new booklet, "Solvent Degreasing."

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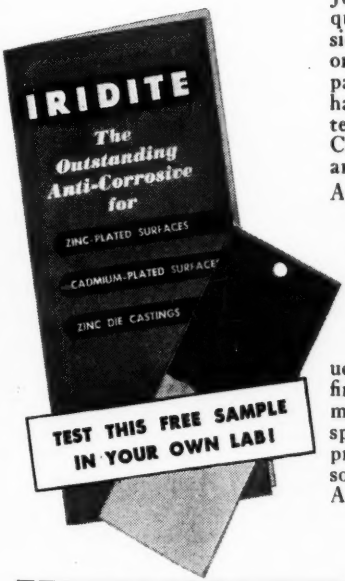
Solvent Vapor **DEGREASERS**
Metal Parts Washers

Standard Units and Specials ENGINEERED for YOU

We've got to beat CORROSION
That's easy: put in IRIDITE

Send for FREE test panel. See for yourself how IRIDITE protects zinc and cadmium—yet applies and dries in a few seconds.



Just mailing the coupon below brings you the quick, simple answer to the problem of corrosion on cadmium plating, zinc die cast, plated or galvanized products. You'll receive a zinc panel, half of it treated with Iridite, the other half not. Give the whole panel any corrosion test you wish, right in your own laboratory. Compare the two halves—and there's your answer.

And that's just part of the story. The rest is the speed and ease with which you can give your products Iridite's all-out corrosion resistance. Fifteen to sixty seconds of simple dipping at ordinary shop temperatures. A few seconds for drying and your product is ready for handling, packing and shipping.

Use Iridite as a paint base and your products hold their paint permanently. Use it as final finish and its attractive colors bring you more sales. Many big manufacturers already specify Iridite for their present or future products. They began as you will, by comparison-testing a sample in their own laboratories. Attached coupon will bring it to you. Act today.

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RHEEM RESEARCH PRODUCTS, INC.
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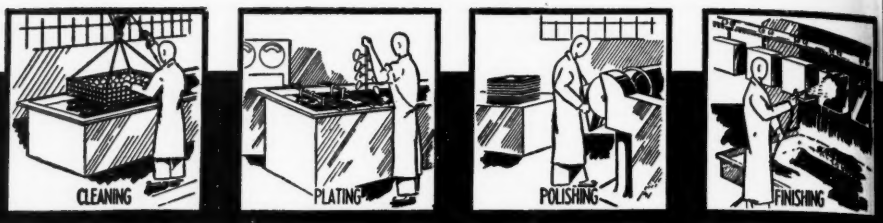
Baltimore 17, Md.

Gentlemen: Please send me a free test panel of Iridite-treated zinc plate and full information and operating details.

Name.....
Company.....
Address.....
.....



News of the Industry

Duffy Named Assistant Manager of Sales

The appointment of J. J. Duffy, Jr., as assistant manager of sales of the Pennsylvania Salt Manufacturing Co., Philadelphia, Pa., has been announced by George B. Beitzel, vice president in charge of sales.

J. J. Duffy, Jr.

Mr. Duffy, a graduate chemical engineer, has been associated with the company since 1937. After completing the company's student training course in 1939, he was assigned to the Special Chemicals Division and for the next three years served as sales-service engineer for that division in the New York State area. He was then called to the Philadelphia office in 1942 to assist William P. Drake, manager of sales, as development and service engineer on the new products of the Special Chemicals Division made necessary by the wartime needs of the industries served by that division.

In his new capacity, Mr. Duffy will assist Mr. Drake in supervising the activities of the Special Chemicals Division's field men.

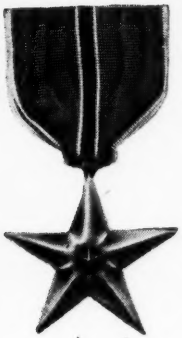
Enthone Development Chemist

Frederick C. Strong III has joined the technical staff of the Enthone Co., New Haven, Conn., as a development chemist. Mr. Strong received his B.A. in chemistry from Swarthmore College and his M.S. from Lehigh University. Before joining Enthone, he was employed with the Superior Metal Company, Lea Manufacturing Company, and more recently as an instructor at Wesleyan University.

3-M Appointments

The appointment of C. P. Pesek as administrator of engineering of the Minnesota Mining and Manufacturing Co., St. Paul, is announced by R. P. Carlton, vice president in charge of manufacturing. W. A. Thomas, assistant chief engineer, has been made engineering consultant on Mr. Pesek's staff.

Mr. Pesek has been with the 3-M Company since January 10, 1944, preparing plans for plant expansion in connection with the firm's decision to resume its pre-Pearl Harbor expansion program in the immediate postwar period.



BRONZE STAR

LEGION OF MERIT

PURPLE HEART

Among the Finest of Finished Articles

...and LEA Methods and Compositions are Contributing Factors

American Emblem Company has this to say about LEA Compound: "It eliminates stain spots, excellent for deburring, gives better control of grain, achieves faster cutting, eliminates drying, and assures a uniform finish." . . . advantages which apply equally well to the company's peacetime products such as this nameplate.

RCA

Of the many different "war" items finished with the help of our technical men and our compositions, none gives us quite the kick that these highly prized medals do. They're for the lads who have "expended" something, for us back here . . . for the lads who did something beyond the call of duty.

These medals are products of the fine craftsmanship employed at American Emblem Company, Utica, New York, whose normal business of producing auto, radio and other nameplates displaying such outstanding names as General Motors, General Electric, Chrysler, RCA and International Business Machines, has been laid aside for the duration.

We're particularly happy to have a modest part in the production of these medals and are displaying them because (1) they are different and (2) you may have a troublesome finishing problem somewhat similar.

ARMY E NAVY

THE LEA MANUFACTURING CO.

Waterbury 86, Conn.

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions

Optimus Appoints Chief Engineer

The Optimus Equipment Co., Matawan, N. J., manufacturer of mechanical metal washing and drying equipment, has announced the appointment of Marcel C. Boss as chief engineer in charge of design and production operations.

Marcel C. Boss

Mr. Boss, who has had a long and varied experience in the manufacture and use of such equipment, was born in Paris and was educated at the famous French engineering school, Ecole Centrale de Paris. Formerly an engineer with the Carrier Engineering Company in London and Paris, Mr. Boss established his own organization, Mabor Company, in Paris in 1930, specializing in the manufacture of metal washing and drying equipment.

In 1942, Mr. Boss came to the United States where he joined the staff of the Hanson-Van Winkle-Munning Company as an engineer. In 1944, he became a member of the executive staff of The Optimus Equipment Company in which capacity he has been active in developing the design of an increasing number of new types of equipment.

Thuesen Elected Vice President

Dagfinn G. Thuesen has been named vice president of the reorganized firm of Paul J. Pauls, Inc., Union Bldg., Plainfield, N. J., importer and exporter of chemicals, resins, plastics, and organic coatings.

Mr. Thuesen, recently connected with Pierce & Stevens, Inc., Buffalo, N. Y., is a member of the American Chemical Society and an officer of the Western New York Paint and Varnish Product Corporation, and has been affiliated with the plastics and chemical industry since 1923. In his association with Paul J. Pauls, Inc., he will act as the firm's consulting chemist.

New Phillips Distributor

The Phillips Manufacturing Company and the Phillips Chemical Company, both of Chicago, announce the appointment of Frank J. Kenney as their distributor for that area of New York State from Rochester east, excluding the Metropolitan New York City area and including the State of Vermont.

Mr. Kenney, who has been very active in this area for many years, will handle the complete line of Phillips metal cleaning machinery, including vapor degreasers, alkali washers, wax melting tanks, and plater's tanks, as well as the line of Phillips controlled cleaning chemicals. His headquarters will be at 815 James St., Syracuse 3, New York.

CLEAN, SMOOTH THREADS

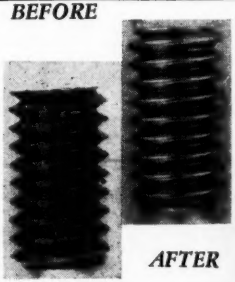
Use Roberts Burring Compond for • Faster production • Complete contacting of all irregular contours due to flexibility of wheels • Smooth, clean work and good color • Preserves all essential dimensions.

Write for samples and suggestions.

ROBERTS ROUGE CO.

STRATFORD • CONNECTICUT

BEFORE



AFTER

IS YOUR DU-LITE PORTFOLIO COMPLETE?

Check List of Contents. Request Missing Pages or Complete Portfolio if you do not have it.

DU-LITE *Chemifinishes*

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Du-Lite Chemifinishes may be the answer to a finishing problem in your plant or for your postwar planning.

DU-LITE CHEMICAL CORP.
MIDDLETOWN, CONNECTICUT

Weldon Roberts Passes

Weldon Roberts, pioneer in the manufacture of rubber erasers, passed away on March 25 in New York City at the age of 77. Until the time of his death, he served actively as president and chairman of the board of directors of the Weldon Roberts Rubber Co., Newark, New Jersey.

An outstanding authority on rubber compounding, Mr. Roberts was responsible for the introduction of colored rubber erasers in America and sometime later applied his inexhaustive knowledge of rubber compounding to the manufacture of the Brightboy line of soft rubber bonded abrasives for metal finishing. Mr. Roberts began his career in 1888 with the C. Roberts Rubber Company in Newark. From 1895 to 1910 he served as president of this company until establishing his own business in 1912.

New President and Treasurer of Wagner Company

According to a recent announcement, Delos R. Hay has been made president and treasurer of the A. T. Wagner Co., 2720 Wight St., Detroit 7, Mich., distributor of foundry and plating equipment and polishing supplies. Mr. Hay is filling the office of the late T. W. Kirby, who for the past ten years served as president of the company.

Delos R. Hay

Mr. Hay has been associated with the firm for 20 years, the last few years serving as vice president. He has a background of knowledge gained by many years experience in the plating and foundry fields that will enable him to serve the industry well.

W. H. Webb Advanced

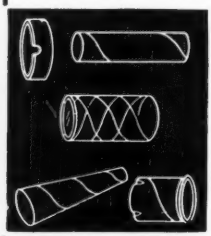
L. C. Camel, sales manager of the Alkali Division of Detrex Corp., Detroit, manufacturer of solvent degreasers, metal parts washers, alkali and emulsion cleaning compounds, chlorinated solvents, and so on, announces the appointment of W. H. Webb as assistant sales manager. Mr. Webb will move to the Detroit office from Indianapolis where he was manager of the Indiana Division. He joined the Detrex organization in 1942 and handled the Michigan territory exclusive of Detroit until he went to Indianapolis.

Mr. Webb was active in the major appliance field for a number of years prior to his association with Detrex, and brings considerable experience in metal cleaning and sales capacities to his new post. He is a charter member of the Jackson-Lansing Branch of the American Electroplaters' Society and held the office of librarian of the chapter in 1942 and 1943.

Most Efficient MASKS for Painting, Spraying, etc.

PRECISION PROTECTORS

Heat-treated Paper Tubes, strong, spiral-wound. Slide easily. Fit closely. No slip-off.



For external threads and surfaces. Also furnished with fibre ends protecting interiors.
Where visibility is required, made of transparent lumarith.
For irregularly shaped parts. Formed crimped or perforated to fit.

Forms to specification. Also used as Dust Caps and Thread Protectors against moisture, corrosion, dirt, in storage or transit. Send for Bulletin and prices.

PRECISION PAPER TUBE CO.
2053 W. Charleston St. Chicago 47, Ill.

No matter what your present metal products are or what you intend to manufacture when the war is won—if you have a metal cleaning problem, our distributor located in your territory is able and willing to be of service. Ask him to describe to you the many variations of METEX Compounds now available for present and post-war finishing room problems. Have him demonstrate the many new improved ANODEX Compounds developed for specific cleaning of ferrous metals. Learn about the other innumerable MAC DERMID INCORPORATED compounds which have been recently developed for every cleaning, finishing, or plating problem.

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Udylite Corp. (L. I. City)	Udylite Corp. Wagner Bros.	Udylite Corp. Geo. A. Stutz Mfg. Co.	Udylite Corp. McGean Chem. Co.	LaSalco, Incorporated	Clark Industrial Supplies Co.

Cowles Representative

The Cowles Detergent Co., Cleveland, Ohio, announces the appointment of Henry G. Wall, Buffalo, as Cowles technical man to handle the technical service work for its Metal Cleaner Department in New York State.

Mr. Wall, who has recently been honorably discharged from the Army, was educated in Buffalo schools and Genesee Wesylan. He has covered the New York State industrial field for many years as a technical engineer on surface coatings and finishes. He has operated a manufacturing business in Buffalo and has a well rounded technical background which will enable him to render valuable service to the metal-working industries.

Henry G. Wall

ALLWOOD

"Vienna Brand" Lime

Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.

WRITE FOR FULL PARTICULARS

ALLWOOD LIME COMPANY

Manitowoc • Wisconsin

Ferro Enamel Purchasing Agent

The Ferro Enamel Corp., Cleveland, Ohio, manufacturer of porcelain enamels, colors, and other materials for the coating of metal products, announces the appointment of George J. Buerman as purchasing agent of the company. Mr. Buerman's duties will embrace the purchasing activities of several divisions of the company, as well as Ferro itself. He has been with the company for 10 years, formerly assisting D. D. Macbeth, purchasing agent, who resigned to become president of the Bruce-Macbeth Engine Co., Cleveland, Ohio.

At present, over 80 per cent of the facilities of the company are devoted to war manufacturing. For outstanding services in the war effort, Ferro has recently been awarded its fifth Army-Navy "E."

Despatch Opens New Sales and Field Engineering Office

To augment its present engineering staff at Minneapolis and to offer greater industrial oven and furnace engineering facilities to manufacturers requiring same, the Despatch Oven Company has opened a new sales and field engineering office in Suite 1334, La Salle Wacker Bldg., 221 N. La Salle St., Chicago 1, Ill. John H. Watson will serve as general manager of the office.

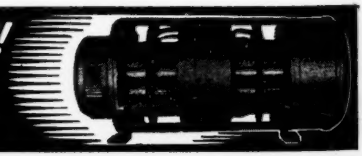
Every man on the engineering staff of the Despatch Chicago Office has had over 8 years, and some up to 23 years, of practical experience in designing ovens and furnaces and in making plant layouts which incorporate ovens and furnaces as well as such auxiliary equipment as cleaning and washing machines, bonderizing systems, spray booths, air conditioning systems, conveyor systems, and the like.

BETTER PLATING, LESS COST!

"MGC" ELECTROPLATING EQUIPMENT

Write for Interesting Details TODAY!

MOTOR GENERATOR CORP., HOBART SQ. PF-45 TROY, OHIO



production records confirm his claims

The satisfaction Joe's plating foreman is experiencing with Harshaw Anodes and Chemicals is reflected in plant production records and is duplicated in other plants where Harshaw plating materials are in use.

Production records pass over Joe's desk. That is how he learns the true facts about whether or not his plating production has been uninterrupted.

These plant production records confirm his foreman's confidence in top performance by Harshaw plating materials and explain why all shop plating requisitions specify Harshaw.

Order Harshaw materials for silver, cadmium, zinc, chromium, lead, copper, nickel, and tin plating . . . for top plating performance.

SEND FOR

- **Lead Plating Booklet of Practical Information**
- **32-page book listing Industrial Chemicals**
- **72-page price list of Laboratory Chemicals**

HARSHAW

THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

Kidde Appoints Insurance Relations Engineer

Walter Kidde & Co., Inc., 140 Cedar St., New York City and Belleville, N. J., manufacturer of fire control equipment, announces the appointment of John J. Caldwell, formerly of the Underwriters' Laboratories, Factory Insurance Association, Century Indemnity Company, and the Standard Surety & Casualty Company of New York, as its insurance relations engineer. Mr. Caldwell will keep in close touch with insurance requirements and developments and will serve as liaison officer between the Walter Kidde Company and the insurance field.

Cooper to New England

As part of the expansion program of the Alkali Division of Detrex Corporation, Detroit, Joel N. Cooper has been transferred form Michigan to the New England states, where he will supervise sales of alkali and emulsion cleaning materials.

Mr. Cooper, whose headquarters will be in Meriden, Conn., started with Detrex in 1940 and was active in the industrial and drycleaning departments prior to his connection with the Alkali Division. He will take East knowledge of a wide range of cleaning applications, having had considerable experience in both the solvent degreasing and alkali spirits washing phases of industrial metal cleaning.

Joel N. Cooper

Rheem Marketing Division

Rheem Research Products, Inc., annouces the formation of a Marketing Division to promote and broaden the use of Iridite—the corrosion-resistant finish for zinc and cadmium plated surfaces, zinc die castings, and hot-dip galvanized products—and to develop new ideas.

Under the supervision of Harry C. Irvin, the Marketing Division will work directly with basic industry on corrosion problems. Jules Horelick has succeeded Mr. Irvin as superintendent of the Baltimore plant.

INDIAN BRAND

Polishing Abrasive
Long Wearing

Indian Brand polishing abrasive has been perfected by our engineers as a substitute for imported Turkish Emery.
This new, long wearing, economical abrasive grain, now being used in many leading defense plants, has brought outstanding results to its users.

Send for trial lot—Free.

HAMILTON
Emery & Corundum Co.
CHESTER MASS.

SOL-KLEAN
for
Better Paint
Adhesion

INDUSTRIAL CHEMICAL PRODUCTS CO.
DETROIT 7
Milwaukee Fort Wayne

HEATING AND COOLING CONTROLS

Low cost - High accuracy

From high speed copper to chrome, and anodyzing to cleaning and rinsing tanks, Sarco has a complete line of temperature controls. The cost varies according to the problem involved, but for the purposes illustrated the simple, inexpensive Sarco LSI Electric Control will do the trick.

It combines accurate temperature indication with automatic control. It is used extensively for both heating and cooling because it costs less, is more reliable and because of the easy adjustment by thumb screw and the built-in dial thermometer.

This is only one of the many Sarco plating controls which range from the low cost Sarco Thermoton, for approximate control of cleaning and rinse tanks, to the highly accurate TR-21 regulator used on many automatic plating operations.

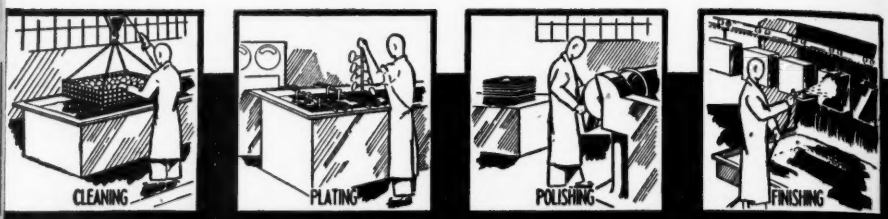
Our representative can show you how others have solved plating problems similar to yours.

49

SARCO COMPANY, INC.
475 FIFTH AVENUE
NEW YORK 17, N. Y.
Represented in Principal Cities

SARCO Saves Steam

SARCO CANADA, LTD., 35 Richmond Street, West, TORONTO, ONTARIO



New Equipment and Materials

Udylite Acid-Proof Industrial Apron

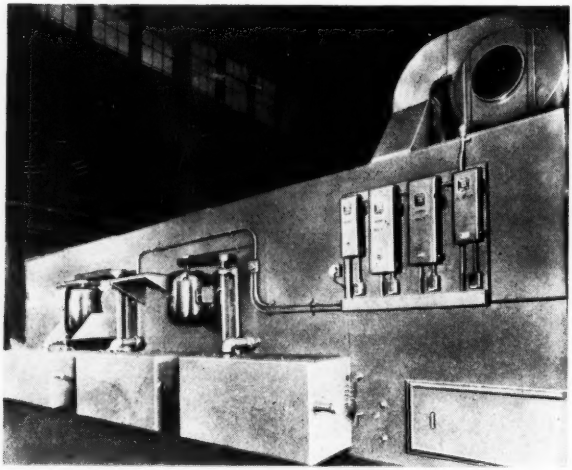
The Udylite Corp., 1651 E. Grand Blvd., Detroit 11, Mich., has placed on the market an industrial apron which is made of a plastic-treated fabric that is said to provide protection against acids for the entire life of the apron. Light and flexible, the apron weighs 1¾ lb. and is 35 x 47 inches in size.

Well made and comfortable to wear, the Udylite Acid-Proof Industrial Apron is provided with wide criss-cross shoulder tapes which are fastened in secure metal grommets, and is hemmed all around. According to the manufacturer, the apron can be readily washed without affecting the acid-proof qualities.

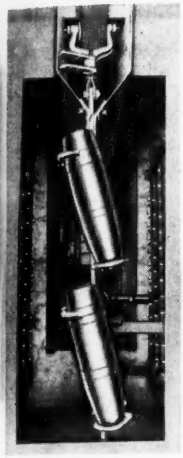
Ransohoff Phosphate Coating Machines

N. Ransohoff, Inc., 1311 Township Ave., Cincinnati 16, Ohio, is now manufacturing monorail and conveyor type spray cleaning machines which are designed to apply phosphate coatings on metal parts prior to painting so as to provide for maximum adhesion between the metal surface and the paint.

The accompanying illustrations show a monorail type 3-stage spray washer for 105 mm. shells. The shells are rung on racks which are so constructed that the shells



Ransohoff
Monorail Type Phosphate
Coating Machine



Interior View of Ransohoff Monorail Type Phosphate Coating Machine

are sprayed inside and out and are held at a slant to permit drainage. The machine is designed for installation into overhead monorail systems already in use in some ammunition plants but can also be obtained with a self - contained monorail if desired.

With a conveyor belt spray cleaning machine, the conveyor is slanted to permit full coverage of the work by the sprays, as well as easy drainage. The monorail and conveyor type phosphate coating machines are both equipped with Ransohoff packless pumps.

McKeon's "Tin Strip"

An efficient and economical product for stripping tin without damage to the base metal, to be known as McKeon's "Tin Strip," has been placed on the market by the Sulphur Products Co., Inc., Greensburg, Pa. According to the manufacturer, the product will not etch the base metal, requires no current, and is fast in action and easy to use.

Wheelabrator Swing Table

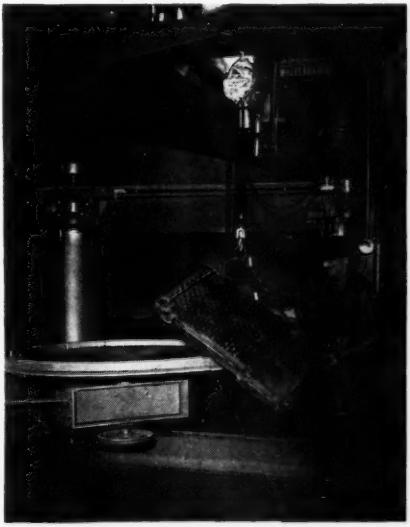
Said to extend the advantages of airless blast cleaning to a wide range of intricate or irregularly shaped work, a swing table utilizing the Wheelabrator airless abrasive blast unit is now being manufactured in 24, 66, 72, and 86-inch diameter sizes by the American Foundry Equipment Co., 525 S. Byrkit St., Mishawaka, Ind. The operation of each size swing table is essentially the same, the machines varying only in minor construction details and the number of Wheelabrator units utilized.

Work to be cleaned is placed on a rubber-covered table which is mounted on the door of the blast cabinet. As the door is closed, the work table swings into the cabinet underneath a Wheelabrator airless blast unit. While in this position, the table is rotated at a predetermined speed. The Wheelabrator unit whips a continuous stream of abrasive down upon the rotating work the full width of the table so that all surfaces are uniformly blasted to a bright, clean finish.

Only a very short exposure of the work to the Wheelabrator unit is said to be required in order to clean the exposed surfaces thoroughly and uniformly. The Wheelabrator unit is then stopped, the door swung open, and the work turned over for cleaning on the underside.

After striking the work, the abrasive falls through perforations in the table top into a hopper below the machine. A screw conveyor transfers the abrasive to an elevator boot section from where it is carried to an overhead abrasive separator. All broken down abrasive and useless fine particles are removed and the useable abrasive falls into a storage hopper for reuse.

An important advantage of the Wheelabrator Swing Table is that all blast cleaning operations are performed within the cabinet. Thus, the operator is not exposed to the abrasive blast or dust.



Wheelabrator Swing Table

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USA BRAND
QUALITY FELT WHEELS

They wear down evenly — require less headings. Polish more parts per wheel. In fact save money on total polishing costs.

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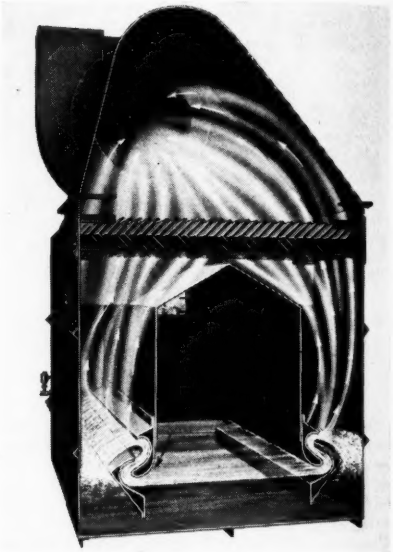
SHEET FELT—all grades and hardnesses in square yards or in strips 25 to 30 ft. lengths.

EASTERN FELT COMPANY
Manufacturers
80 CANAL ST., WINCHESTER, MASS.

AAF Type "N" Roto-Clone

Recent addition to the line of Roto-Clone dust collecting equipment made by the American Air Filter Co., Inc., First and Central Aves., Louisville 8, Ky., is the AAF Type "N" Roto-Clone illustrated herewith, which is based on the principle of hydrostatic precipitation. Compact and easy to install, the unit, due to the absence of moving parts, is said to be ideal for the safe control of



Cutaway View of AAF Type "N" Roto-Clone

magnesium and explosive dusts, the collection of lint and explosive dusts resulting from buffing operations, and the exhaust of corrosive gases.

The air is cleaned by a combination of centrifugal force and thorough intermixing of water and dust-laden air. The air, forced through the sinuous passage of the stationary impeller, induces a heavy sheet of water to move along the surfaces of the impeller blades, creating a water curtain in the form of a reverse "S" through which the air must penetrate. According to the manufacturer, the high collection efficiency of the unit is the result of the impingement of the dust in water due to the centrifugal action in the impeller and the scrubbing

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MODERN SYNTHETIC FLUID

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SUPER-CLEANING

action of the water curtain through which the clean air is returned to the workroom.

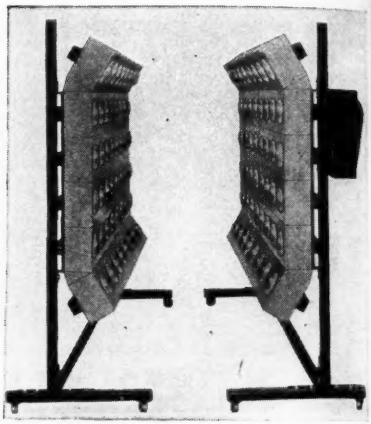
The AAF Type N Roto-Clone is manufactured in three classes and 13 sizes for the exhaust of air columns from 1,000 to 25,000 cubic feet per minute.

Fostoria Evenray System

An infra-red system for baking, drying, preheating, and dehydrating operations, to be known as the Evenray, has been introduced by The Fostoria Pressed Steel Corp., Fostoria, Ohio. The system is available in three principal models designated as the 40-000, 43-000, and 47-000.

The Models 40-000 and 43-000, utlizing reflector type sources, are unique in the employment of gold plated reflecting surfaces to utilize the greatest amount of the generated energy. Any reflecting surface placed back of, surrounding, or used in conjunction with the sources will, it is claimed, provide for redirection of energy in opposed banks. Applied on steel over successive coatings of nickel and copper, the gold is said to withstand diffusion and can be maintained easily in excessively dirty locations. The gold plated reflecting surfaces are positioned flush with the faces of the sources.

The Models 40-000 and 43-000 are prac-



Fostoria Evenray System Utilizing Reflector Lamps and Gold Plated Reflecting Surfaces

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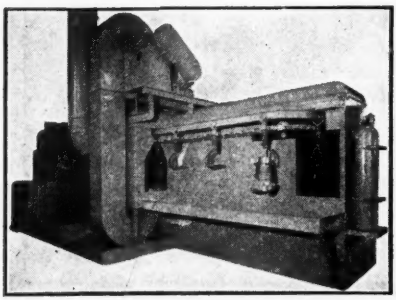

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ANODIZING RACKS BY NANKERVIS

George H. Nankervis Co., 5408 Commonwealth Ave., Detroit, Michigan, designs and manufactures racks and fixtures for every type of anodizing and electro plating service.

The rack shown is one of a complete line of production anodizing fixtures designed to handle every shape and type of part. It pays to use "Nankervis" racks —expertly designed and made, yet costing no more than ordinary racks. Another point: Nankervis specifies and uses BUNATOL for rack insulation; No. 160 for anodizing racks and No. 720 for all other types. BUNATOL rack insulation has, for nine years, been the outstanding insulation in hundreds of shops.

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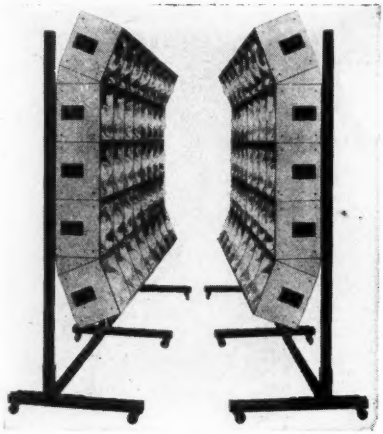
tically identical in construction. A bank of 40-000 equipment eight lamps long and



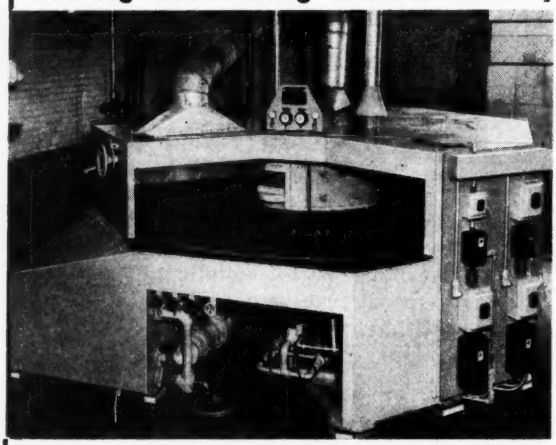
Fostoria Evenray System Utilizing Clear Lamps and Special Gold Reflectors

six lamps high if contoured to form opposed flat banks would result in an oven with an overall length of 52¾ inches and a height of 39 7/16 inches exclusive of mounting bases. Sources of 40-000 equipment are located on centers of 6 19/32 inches, while source centers on 43-000 equipment are 8¼ inches apart. Both models are designed to accommodate 125, 250, and 375-watt, 120-volt lamps.

In contrast with the Models 40-000 and 43-000, the Model 47-000 utilizes clear sources and a specially designed gold plated reflector, and is designed to accommodate sources ranging from 125 to 1,000 watts. While the energy distribution with the Models 40-000 and 43-000 is said to be above average in evenness, the Model 47-000 is claimed to provide still greater uniformity. A 47-000 bank eight lamps long and six lamps high measures 88 inches in length and 66 inches in height, exclusive of mounting base. Lamp centers on the Model 47-000 are 11 inches apart since the reflectors are 11 inches square.

All Evenray models provide protection for source bases and for ventilation of heat which might be conducted or reflected to sockets and wiring channels. On the Models 40-000 and 43-000, the source bases are protected from reflected energy from opposed banks by the posi-

Cleaning and Treating of Metal Parts by one-man-operated



Roto-Table Machine

This heavily constructed machine has established an enviable production record. Noted for its simplicity in engineering design, with few moving parts; the work clearance is 40 inches in width and 20 inches high. Turn table functions at various speeds. Handles large or small parts, and is adaptable for a broad type of service. There are several sizes of this machine available.

Our Engineering Department can help you in metal cleaning problems. Write or 'phone us.

We also design and manufacture large or small machines for cleaning, pickling, rustproofing and drying processes.

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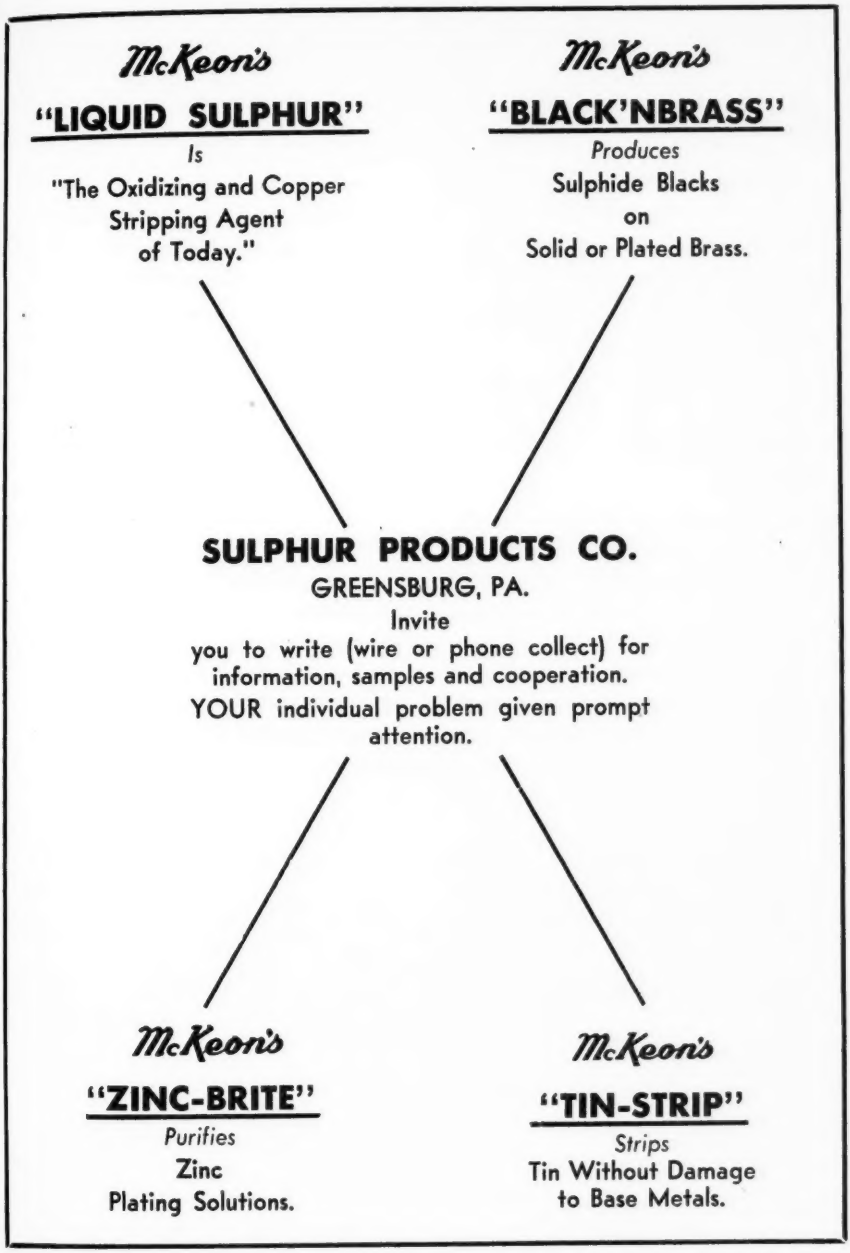
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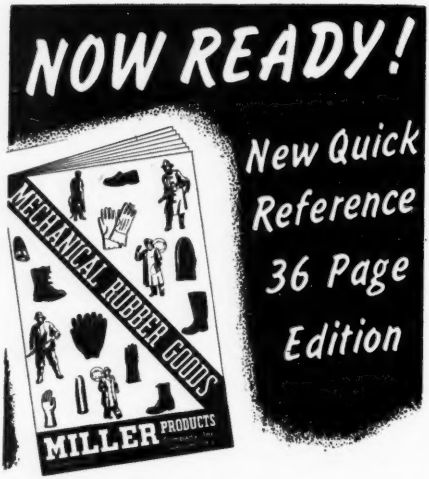

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tioning of the gold plated reflecting surfaces which are flush with the faces of the lamps. The sockets and wire in these models are enclosed in wiring channels which are mounted on the backs of the sections, entirely outside the ovens. Any small amount of energy conducted to those parts is said to be dissipated into the air. Temperature rise in the glassware neck of each source located within the sections is reduced by natural convection currents within the oven walls but outside the radiated zone itself, since the sections are open at the top and bottom.

The source bases, sockets, and wire on the Model 47-000 are adequately shielded from reflected energy. The wireways mounted inside the 11-inch square sections are said to be afforded ample natural ventilation to carry away any energy conducted there from the sources.

All standard Evenray models are equpped with casters to provide mobility. Angle separators can be inserted between sections to achieve a variety of tunnel contours in accordance with the shape and size of the product. An outstanding feature claimed for this type of construction is its almost 100 per cent salvageability, since any oven may be taken apart and reassembled in a wide variety of sizes and shapes. Moreover, additions may be made when desirable without detracting from the finished appearance of the oven.

Improved Taber Abraser

Taber Instrument Corp., 111PF Goundry St., North Tonawanda, N. Y., announces that its Taber Abraser for use in determining the wear or abraser resistance of practically every material subject to surface abrasion has been improved and is now available in a complete testing set which, in addition to the Abraser, includes all accessories, together with a specimen table for conducting tests under wet or moist conditions. An illuminated magnifier for the inspection and examination of specimens is also a part of the set.

The wearing action of the Taber Abraser is provided by dual Calibrase wheels bearing against the specimen under constant pressure and revolving in opposite directions, one sliding radially toward the outside and the other sliding toward the inside of the wear path. Each wheel revolving at a constant speed through contact with the specimen exerts a combined

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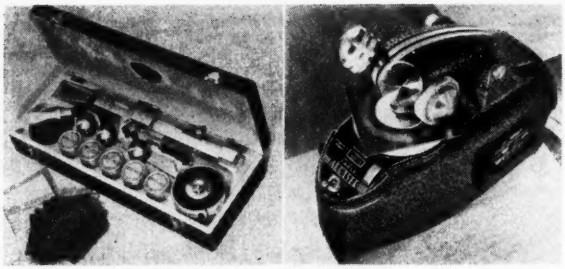

(Left) Taber Abraser Testing Set. (Right) Improved Taber Abraser

abrasive, compressive, and twisting action twice with each revolution of the specimen holder. Since the specimen holder travels a complete cycle, the wear due to differences of grain or weave is fully revealed. A standardized load adjustment is provided for varying the pressure of the Calibrase wheels against the specimen so that the Abraser can be used to test delicate and tough materials with equal precision.

The Taber Abraser is self-contained and can be readily operated by simply plugging into an electric circuit. The results of tests are reported either as the number of "Wear Cycles" or as "Loss in Weight" when specimens are weighed on a precision laboratory balance.

"Spekwite" Finish

Said to have the beauty and durability of a precious metal finish, "Spekwite"—a tarnish-resisting white plate—is announced by the Special Chemicals Co., 38 Irving Place, New York 3, N. Y. To apply, Spekwite merely requires a steel tank which serves both for the plating bath and as the anode. No after polishing of work that has been Spekwite plated is said to be necessary.

For decorative finishes, the average plating time with Spekwite is one minute. In two hours, Spekwite is said to plate to 0.001-inch thickness. It can also

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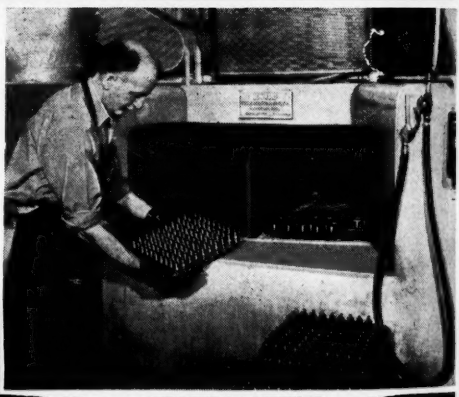
Illustration shows a seven stage Howard Rotary Washer cleaning aircraft hydraulic valve parts for ADEL Precision Products Corp., Burbank, Calif. HOWARD ENGINEERS will gladly show you, too, how to reduce costs, increase production, improve quality.



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be built up to greater thicknesses.

Spekwite is designed to plate directly over nickel, German silver, brass, copper, gold, silver, iron, and steel and is said to cover hard solders and a majority of soft solders. Soldering and welding can, it is claimed, be performed on any Spekwite plated work. The high throwing power of Spekwite is said to enable it to penetrate to deep recesses, thus making it ideal for basket plating.

Cesco Acid Hood

A hood which is said to afford workers protection against all concentrations of nitric, sulfuric, hydrochloric, acetic, hydroflouric, and carbolic acids has been developed by the Chicago Eye Shield Co., 2300 Warren Blvd., Chicago 12, Ill. Made of Cesco Acitex, the hood includes a clear window which provides normal vision and is said to be equally acid resistant. When worn, the hood covers the head, shoulders, chest, and back and is snugly tied at the waist.

Cesco Acid Hood

The Cesco Acid Hood features an air-feed unit as well as side vents for maximum air circulation. The vents are said

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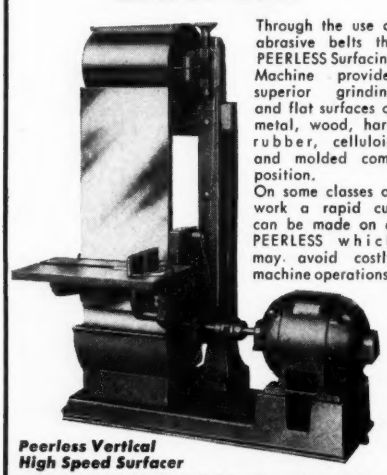

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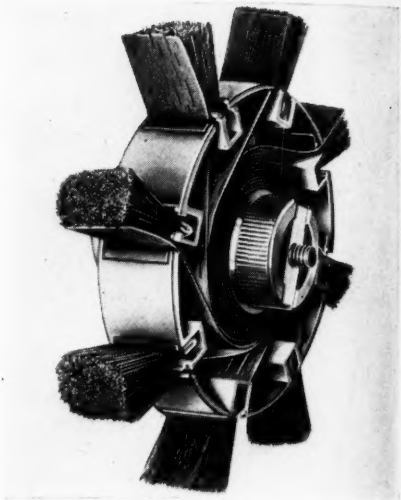
to be splashproof. The built-in headgear and light but durable fiber frame supporting the window also add to wearing comfort.

Sand-O-Flex Brush-Backed Sanding Wheel

Known as the Sand-O-Flex, a brush-backed sanding wheel for use in sanding, deburring, and finishing metals, plastics, and other materials has been announced by the Exactone Tool and Die Co., 4373 Melrose Ave., Hollywood 27, Calif. The wheel consists of a central magazine which houses strip abrasive. Eight of these strips extend through the housing and are held against the work by means of tough bristles which "cushion" the abrasive, thus affording access to corners, hollow and fluted surfaces, and small openings.



Sand-O-Flex Brush-Backed Sanding Wheel with Cover Removed

The body and the cover of the Sand-O-Flex are cast from Zamak. The overall diameter of the unit, including brushes, is approximately 8 inches. The weight of the unit fully loaded is approximately 2¾ lb. A normal loading comprises 20 feet of abrasive and reloading is effected by

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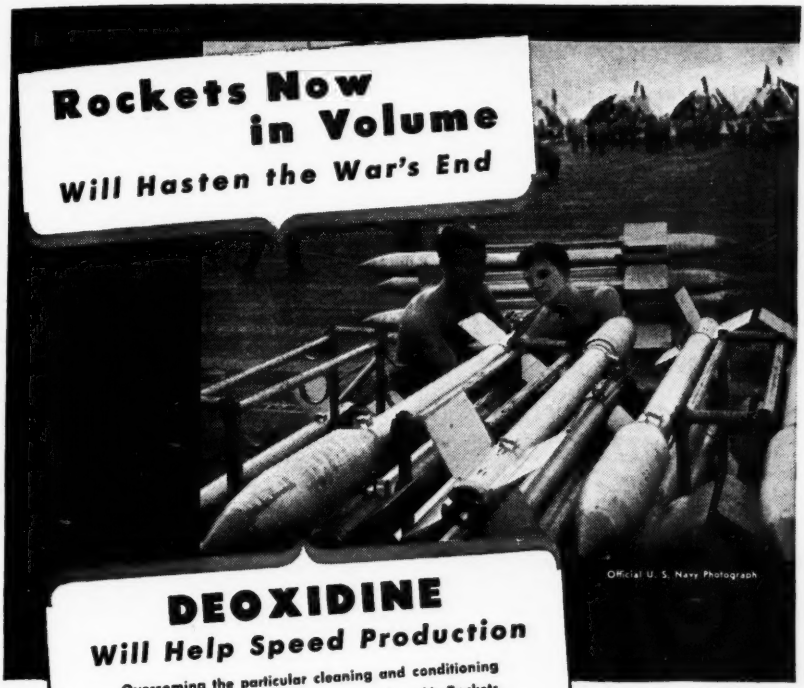
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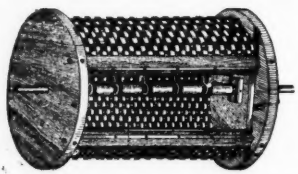

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simply unscrewing a serrated nut and removing the cover. A wide range of abrasives of various grits and grades are supplied for use with the sander, thus permitting it to be used in all operations from rough to fine finishing.

The Sand-O-Flex is designed to fit standard ¼ and ⅝-inch motor shafts, stationary or flexible, or can be supplied on special request to fit practically any size shaft. The unit is recommended for operation at a motor speed of 1,750 r.p.m. and is claimed to be particularly suitable for use on a flexible shaft. According to the manufacturer, the Sand-O-Flex is ideal for removing tool marks and burrs from metal parts; removing varnishes, enamels, and other protective coatings; finishing and polishing jewelry products; removing platings, and so on.

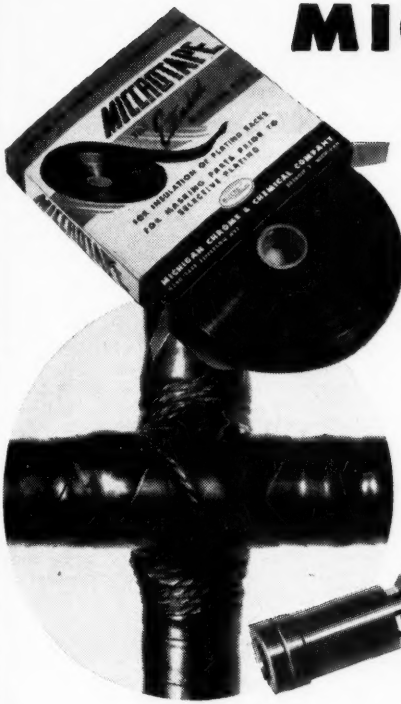
"Ferrodex" Electrolytic Compound

"Ferrodex," an electrolytic compound now being marketed by the W. D. MacDermid Chemical Co., Bristol, Conn., is said to possess the unusual property of brightening surfaces which in turn require a very short acid treatment at low concentrations following their removal from the Ferrodex solution. The unusual throwing power of the Ferrodex solution is said to provide for smooth, uniform electro-deposits on recessed parts and where deep plate penetration is desired.

By cleaning metal surfaces thoroughly in a single operation, Ferrodex, the manufacturer states, eliminates vapor and solvent cleaning and makes pre-soaking, hand cleaning, or wet rolling unnecessary. Ferrodex, it is claimed, has long solution life due to its stability at high temperatures, and, with proper use, is said to require only replenishment to compensate for drag-out losses. Due to the inhibiting action of the special buffering, silicate developed for use with Ferrodex, very slow solution decomposition is claimed to take place.

Abrasive Utility Kit No. MP21

A useful and convenient kit combining 20 carefully selected mounted point items with an Electrolon (silicon carbide) dressing stick 5 x ½ x ½ inch, to be known as the Abrasive Utility Kit No. MP21, is announced by the Abrasive Co.,


MICCROTAPE
FOR INSULATION OF PLATING RACKS
FOR MASKING PARTS PRIOR TO SELECTIVE PLATING
MICHIGAN CHROME & CHEMICAL COMPANY

MICCROTAPE

The Only

TAPE OF ITS KIND MADE BY THE

Extruding Process

At left: Intersection of spline and contact wires of plating rack. On this application, corners were pulled tight with twine, after which the tape was fused to form an integral, snug-fitting coating.

Above: This part, masked for hard chrome plating, has a very irregular profile and a large gap in the portion to be covered. Yet Miccrotape covers the whole area completely with a coating of uniform thickness.

FOR INSULATION OF PLATING RACKS

Because Miccrotape is an extruded tape it has a slightly curved surface which feathers out to uniformly light edges. This feature makes Miccrotape extremely easy to apply and permits unusually smooth over-lapping and a snug fit around every surface.

In addition, it has many other characteristics to make it ideal for plating rack use. Mentioning only a few, it is effective in plating baths up to 190° F. and withstands boiling hot cleaning solutions and pickling baths. It has high dielectric strength, will not crack or harden after continued use, has a smooth glossy surface, and has unusual properties of tensile strength and cohesion.

MASKING PARTS PRIOR TO SELECTIVE PLATING

The extruded feature of Miccrotape makes it extremely adaptable to masking for hard chrome plating or selective copper prior to carburizing. The tape fits snugly in grooves and around shoulders and is quickly applied. No time-consuming heat sealing is required. Instead, a small dab of Miccrotape cement holds the entire wrapping tightly and securely.

After plating, Miccrotape can be quickly removed, leaving a perfectly clean, unmarred surface. It has been found that, after removal, this tape can be used several more times before it is discarded—an added feature of economy in its use.

Write for full information on the complete lines of Miccro protective coating materials.

MICHIGAN CHROME & CHEMICAL CO.
6342 EAST JEFFERSON • DETROIT 7, MICHIGAN

Abrasive Utility Kit No. MP21

Tacony and Fraley Sts., Philadelphia 37, Pennsylvania.

The points are mounted on stainless steel mandrels 1½ inches long x ⅛ inch in diameter and may be used on high speed grinders of the air, electric, or flexible shaft type. The dressing stick enables the user to dress the points and also to alter wheel shapes for special applications.

G-BEX C Degreasing Compound

G-BEX C, an emulsifying degreasing compound which is said to brighten as it cleans, has been announced by the Gaybex Corp., P. O. Box 3, 388 Franklin Ave., Nutley 10, N. J. The compound is supplied ready to use and is said to contain no free alkalies.

Although applicable to ferrous metals and many plastics, G-BEX C is especially blended for the degreasing and brightening of aluminum and white metal alloys. According to the manufacturer, the compound has a flash point of 165 deg. F and may be safely handled without toxic effects. Its odor is said to be slight pleasant, and to disappear rapidly.

Parts and surfaces may be dipped in or sprayed with G-BEX C, after which they should be thoroughly rinsed with clear water. The action of the compound is to dissolve grease and oil, loosen dirt, and reduce oxide stains. No powder or harmful residue is said to remain after the water rinse.

PLATING EQUIPMENT WANTED

ELECTROPLATING:

—GENERATORS
—RECTIFIERS
—RHEOSTATS
—BARRELS
—ETC.

We will buy or sell any electroplating or polishing:

EQUIPMENT • CHEMICALS • COMPOUNDS

State Full Particulars

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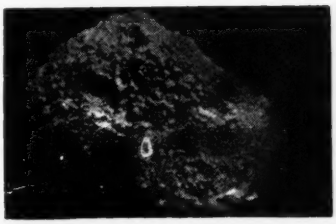
Engineering "know-how" enables us to make Carriers lighter, yet stronger... permits larger loads of metal parts in smaller baskets, crates, trays, racks, fixtures. Whatever your problem in single process handling or continuous cycle finishing, ask Rolock to custom-build the right Carrier for the specific job . . . capacities to 8000 lbs.

SEND FOR CATALOG

ROLOCK, INC.
1400 Kings Highway East, Fairfield, Conn.

Check this list of uses for



FLOCK ✓

used for coating, decorating and building up many types of surfaces

The application of Flock (fine textile particles applied by adhesive) to your product may provide the specific answer to a problem facing you. Flock can literally transform a surface, for either decorative or functional purposes of a surprising variety. Let us know what purpose you are considering it for — we'll render sound advice promptly!

Ask for samples and details of applicability

FUNCTIONAL

Used in airplane, auto and numerous other industries for—

SOUND DEADENING • TEMPERATURE INSULATION • INTEGRAL GASKETS • SHOCK ABSORBING SURFACE • NON-MAR SURFACE PROTECTION.

DECORATIVE

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—

SUEDE LEATHER • FURNITURE UPHOLSTERY FABRICS • AIRPLANE AND AUTO UPHOLSTERY FABRICS • VELVET • VELOUR • MOHAIR.

RAYON PROCESSING CO. of R.I. INC.

65 TREMONT ST., CENTRAL FALLS, RHODE ISLAND

Developers and Manufacturers of Printing and Coating Flock

G-BEX C is available in 7½ and 54-gallon drums.

"Televac" Recording Instrument

A recording instrument to be known as the "Televac" is now being offered by the Precision Scientific Co., 1750 N. Springfield Ave., Chicago 47, Ill. The instrument is available in two types designated as the "MR" and "S."

"Televac" Type "MR" Recording Instrument

The Type MR instrument has a range of 0 to 500 microns and utilizes the Televac No. 500 thermal gage with specially treated elements. Features of the gage include coated filaments to prevent "off calibration" periods due to water, oil vapor, or other contaminating vapors; increased sensitivity gained through the use of two filaments in both standard and variable tubes of the gage; and interchangeability without recalibration. The gage is supplied with a special Leeds & Northrup Micromax strip chart recorder calibrated directly in microns.

The Type S recorder for ultra vacuum covers two ranges; namely, 0 to 500 microns for pressures above 1 micron, utilizing the No. 500 thermal gage, and 0 to 0.4 microns utilizing an industrial type ionization gage. Accurate readings may be obtained down to 10^{-6} mm Hg. (0.001 micron). The Type S instrument also features a safety circuit which permits the ionization gage to be turned on until a vacuum of 1 micron has been reached. Average life of the ionization gage is said to be 3,000 hours.

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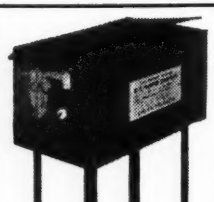
Available Again!

BALLOU'S
Imitation Chrome Aluminum Paste

Will produce a beautiful imitation of a real plated finish when used in conjunction with quick bake synthetic or varnish type vehicles.

Send for sample and prices.

Edward C. Ballou Co.
6 Varick Street, New York 13, N. Y.



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For Export Packaging
CLEAN METALS *Faster! Cheaper! Safer!*

Cooper specially engineered electric or gas heated thermostat controlled tanks pay for themselves in a hurry. A multitude of uses. 5, 15, 30, 60 gallon sizes and larger. Quick delivery. Write for circular.

Also Chemicals, Rust Preventatives, Silica Gel, Etc.

D. C. COOPER COMPANY, 20 East 18th Street, Chicago 16, Illinois

REMOVE PAINT

CLEAN METAL with FIDELITY

Stripping and Cleaning Compounds

No matter what the surface looks like, the right Fidelity product will restore it to clean metal in record time!

Coats of paint and enamel break loose easily with the proper stripper. Grease and grime quickly dissolve with the correct cleaner. The result is a perfectly clean surface, ready for any type of finishing.

Call in a Fidelity service engineer today for a free survey of your cleaning requirements. His recommendations will help to step up efficiency in your plant.

FIDELITY CHEMICAL PRODUCTS CORP.

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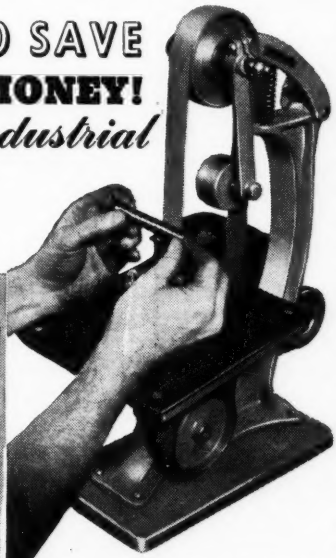
HUmbolt 3-3440

"Serving industry with cleaning and stripping compounds"

18 WAYS TO SAVE TIME & MONEY!

with the Mead Industrial Burring Machine



New circular explains, illustrates 18 ways in which the Mead Industrial Burring Machine saves time and money—also contains special Grit Guide. Every industrial plant needs this "Jack-Of-All-Trades" machine. Your burring can be done in "free time"—install these machines by every machine tool which leaves burrs. Grinds, finishes both outside and inside cut-out openings. Immediate delivery in most cases.

Send for the informative Money-Saving Circular now.

For Metal—Wood—Plastic

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Opportunity Section

WANTED

Chemist-Salesman. Must be versed in the plating business. Give full particulars first letter. Write Box 52, Products Finishing, 431 Main St., Cincinnati 2, Ohio.

Technical Salesman Wanted

Manufacturer of rust preventives selling 600 industrial accounts desires technical salesman familiar with cleaning material and methods of marketing. To have full charge of introducing new line of cleaning materials to our industrial accounts. Wonderful opportunity. Please give past experience, age and present vocation. Write Box 55, Products Finishing, 431 Main St., Cincinnati 2, Ohio.

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(New or Used)

Electroplating Generators
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Burnishing Balls
DC Ammeters and Voltmeters
Polishing and Buffing Lathes

"Idle Equipment Is Wasted Equipment"

Write us full particulars and our representative will call.

BAKER EQUIPMENT CORP.
143 Sidney St., Cambridge 39, Mass.

Coleman Certified Buffer Tablets for standardizing all kinds of pH meters are covered as to composition, prices, and so on, in a four-page illustrated catalog section prepared by the Wilkens-Anderson Co., 111 N. Canal St., Chicago, Ill. Copy of Catalog Section B-205 free upon request.

American Tabl-Spray Metal Washing Machine. Bulletin No. 19 which describes the American Tabl-Spray Metal Washing Machine manufactured by the American Foundry Equipment Co., 525 S. Byrkit St., Mishawaka, Ind., has been revised to incorporate new developments in the equipment. The bulletin fully covers operating sequences, mechanical features, construction specifications and details of the machine, which is especially designed for the high speed washing of flat, fragile work or circular parts with intricate pockets and crevices. Schematic drawings and diagrams are included to illustrate the thorough spray cleaning action on the parts to be cleaned.

Briefly described is the extensive metal-cleaning laboratory of the company which is equipped with practically every facility for scientific testing and anaylsis of metal-cleaning problems. Short descriptions with illustrations of other models of the American metal washing machine line, including the Conveyor-Spraying machine for washing, rinsing, and drying metal parts in one continuous operation and the Tumbl-Spray machine, are also presented in the bulletin, copy of which is available free upon request.

CHEMIST WANTED

Situation Open—East Coast manufacturer of corrosion-resistant finishes needs a chemist with technical background to carry on development work of new products. Ability to write technical reports essential. State age, experience, draft status, and availability in your first letter. All replies confidential. Write Box 54, care of Products Finishing, 431 Main St., Cincinnati 2, Ohio.

Hammond of Kalamazoo

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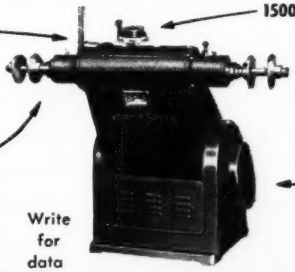
HAMMOND VARIABLE SPEED LATHES for POLISHING and BUFFING

Combination SWITCH & BRAKE

Foolproof operation and complete safety provided. Supplied as standard equipment.

Overhanging Spindle

Large or bulky pieces handled without interference. Ball bearing spindle construction provides smooth, vibrationless operation.



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The DIAL does it!

Finer, better, more uniform finishes obtained by maintenance of constant peripheral speeds. Quick change provides wider range of work handled.

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5 and 7½ HP capacity for continuous two-man operation increases production.

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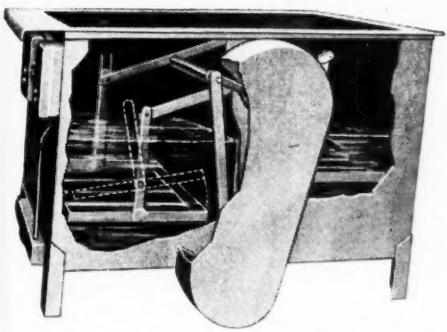
1622 DOUGLAS AVENUE • KALAMAZOO 54, MICHIGAN

FOR "Hard-to-Clean" PARTS



NEW TWO-STAGE SURGE WASHER

This new Phillips metal washer has 2 compartments — for washing and rinsing. Each surge platform handles parts or basket loads of 50 lbs. each, giving maximum agitation, both vertical and tilting. Removes chips, grease and dirt not easily removed by simple dip or vapor degreasing. Either or both tanks heated or unheated. Hinged cover acts as drain board. Can be used with emulsion or alkaline cleaner.

We recommend SWIRT for use with this Phillips Two-Stage Surge Washer. SWIRT in the cleaning tank—water in *non-toxic, odorless—high flash point.* SWIRT is the cleaning tank—water in the rinse tank — makes an efficient, economical metal washing combination.

Send for complete free catalog of Phillips Metal Cleaning Machinery. Vapor degreasers—dip tanks—washers. Phillips Engineered Service offers a specialized machine for every cleaning problem. Lists of installations available on request.

PHILLIPS MFG. CO.

3452 W. TOUHY AVENUE
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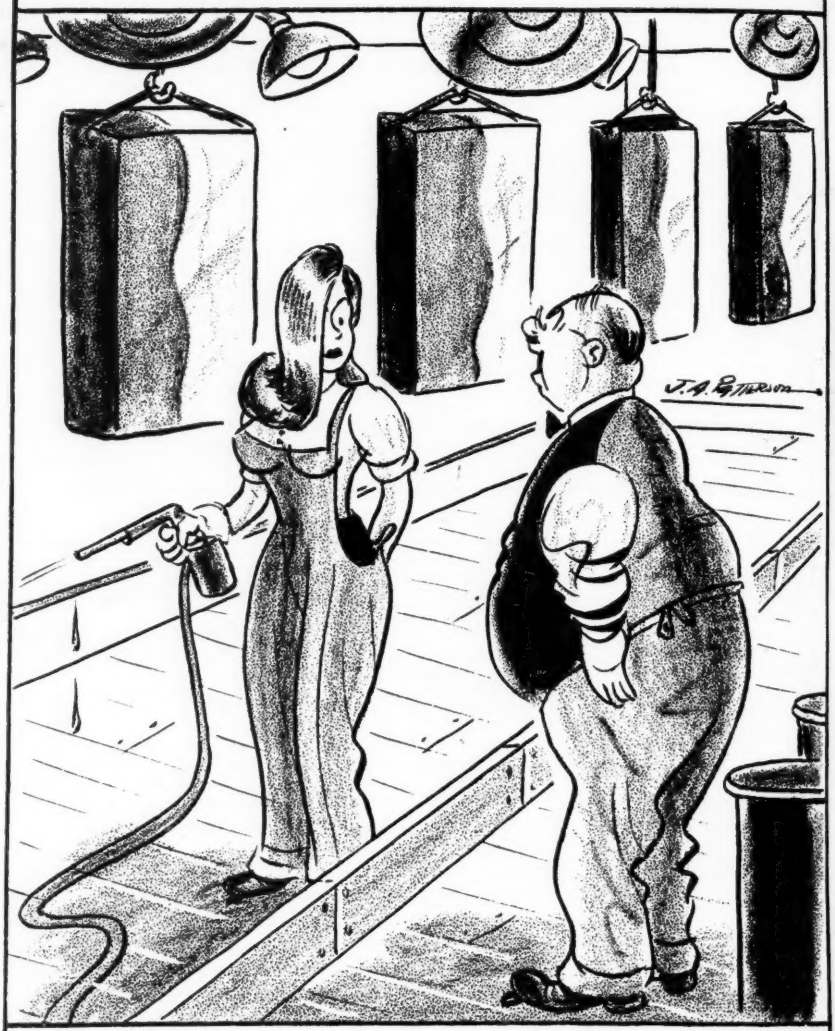
The Finishing Touch — **By J. A. Patterson**



"Listen, Miss Veronica Pond suppose you pull that hair back with a net --- then you can paint all you're supposed to paint!"